



# WHAT MAKES A GREAT UR PROJECT?

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**WHAT ARE THE ELEMENTS OF A GOOD PROJECT,  
IN YOUR DISCIPLINE, FOR AN UNDERGRADUATE?**

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# UR STUDENT LEARNING OUTCOMES

Through their participation in an undergraduate research project, students will be able to:

- \* develop a research question, problem, or design;
- \* apply basic principles and knowledge found in the literature related to the research question;
- \* develop a research proposal to address or resolve a specific research question or problem;
- \* apply and evaluate methodology throughout project;
- \* collect, interpret, and critique data in order to resolve a research question or evaluate a design;
- \* communicate research findings; and
- \* appreciate what the process of scientific research entails.

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# HOW DOES YOUR MENTEE'S PROJECT STACK UP?

How do you feel about the project your student will be working on?

How do you think your mentee feels about the project?

Given what we just discussed is it a “good project?” If so, how? If not, what can you do now to “fix” it?

# EXPECTATIONS



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# EXPECTATIONS

What are your expectations of the student and of the project? Are they realistic?

What workplace expectations—explicit and implicit--do you have of the student?

What do you expect from yourself as a mentor? How do you see your role? How will you fit in into your schedule?

How do you plan to communicate this to your student?

# SETTING EXPECTATIONS

Discuss the project in terms of major goals or expected outcomes and link project to your larger research goals or the goals of the research group.

Discuss the summer period in terms of academic, professional, or personal goals that your mentee might have in addition to the research goals.

Share expectations in terms of personal and group work style, expected professional behaviors, etc.

Based on this, identify what your mentee needs and what you need to do to help them be successful.

Establish times to check in and see how things are going with both the research and the process.





# CASE STUDY REFLECTION QUESTIONS

If you were the undergraduate student, how would you feel? Why?

If you were the mentor, what would/could you do? How do you help your student through this?

How could you find out, in advance, what expectations your student has of what they will be working on?

When choosing a project for your student, how do you weigh their interest with the immediate needs of the research PI or group?

How, as the mentor, could you have set expectations in the beginning about the project?

# CASE STUDY 1

I mentored an undergraduate student who came from another university for the summer. I explained the project to him and taught him some basic techniques and approaches needed for the project. Because the PI and I did not think he had sufficient background for a more complicated project, we chose to have him work on a more basic one.

He was very quiet for the first ten days of the project, and then he went to the PI and complained about the project. He said he wanted a project "like Mark's." Mark was a student with a strong disciplinary background and his project was much more advanced. The PI insisted that my student keep the project I had designed for him, but the student became sulky. As the summer went on and he didn't get much, if any, of his work done, I began to wonder if he understood what we were doing or even cared about it.

## CASE STUDY 2

I am a graduate student in a large lab. A week ago an undergraduate joined me to do a summer project. She really wanted to come to our lab and aggressively sought out the opportunity. She had seen presentations about our lab's research and read some of our major papers. My advisor and I came up with two aspects of my research compatible with her interests that would be feasible for her to work on in a ten-week period. She chose one of the projects and wrote her application based on it.

When she arrived she enthusiastically presented her idea for a different project. It was related to what we do, but branched into a new field that my adviser was not funded for and about which I knew little. I didn't want to squash her enthusiasm but felt overwhelmed by the prospect of learning a new field in order to advise her well. I felt stumped and didn't know what to do.

# CASE STUDY 3

Tom arrives as a summer student, excited by the new experiences in front of him. After talking with him, Tom's mentor, Alice, learns that he is a junior at a small college where there are two physics faculty, one of whom knows a bit of astronomy. Tom has not had any astronomy or astrophysics courses, although he helped set up a new undergraduate observatory on the campus. He has had no experience with scientific computing.

Tom is enthusiastic about the numerical simulation project that he has been given. He is attentive during the first weeks as he receives a lot of preparatory information covering a wide array of subjects. His first steps in actually doing the project are slow and a bit tentative, which Alice chalks up to a steep learning curve. He puts in full days and asks a lot of questions, albeit rather elementary ones.

But by the fifth week, Alice begins to wonder if Tom may be in over his head. He isn't progressing with either the computing or the astrophysics as fast as she had expected. He has become quiet at team meetings now that the conversations have shifted toward ongoing research, and when questions are directed to him about his research Tom answers curtly and without much content. He doesn't talk with the other students about his work.

Alice is concerned that the summer may be turning into a negative experience for Tom. But when she asks Tom how things are going, Tom says everything "is fine." He still puts in many hours each day, although Alice is not sure what he is doing. Alice wonders what to do now, if anything.

# PROBLEM SOLVING TIPS

Be pro-active

Listen carefully to your mentee's goals

Identify your expectations and clearly communicate them to your mentee

Be flexible and willing to alter your expectations if things aren't working

Check-in with your mentee regularly and be willing to change direction of the project, if needed

Identify time in your schedule to dedicate to your mentee and reflection on the process

Deal with issues early and clearly.



# THANK YOU!

## Undergraduate Research Mentoring Lunch Series

June 13: Launching the Project: Negotiating Expectations With Your Mentee

June 20: Effective Communication and Giving Constructive Feedback

June 27: Inclusive Mentoring: Challenges and Solutions

July 11: When Personal Issues Impact the Research: Helping a Mentee in Need

July 18 Troubleshooting: Helping Your Mentee Make Progress

July 25: From Student to Scientist: Helping Your Mentee Grow and Develop

August 1: Wrapping Up the UR Experience for You and Your Mentee

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