

# Horticultural Science Student Research Experience Handbook

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## Research Experience Defined

An undergraduate research experience provides the opportunity for hands-on discovery, inquiry, and research skills development including literature review, hypothesis testing using a well-defined experiment, and analyses, synthesis, and presentation of research findings through close collaboration with a research mentor.

### Differences between an Internship and a Research Experience

INTERNSHIP	RESEARCH EXPERIENCE
<b>Purpose:</b> <ul style="list-style-type: none"> <li>&gt; Primarily a learning experience</li> </ul>	<b>Purpose:</b> <ul style="list-style-type: none"> <li>&gt; Primarily a learning experience</li> <li>&gt; Testing the graduate school waters</li> </ul>
<b>Salary:</b> <ul style="list-style-type: none"> <li>&gt; May/may not be offered pay but often are paid</li> <li>&gt; Academic credit (HS 492) will be given to the student</li> </ul>	<b>Salary:</b> <ul style="list-style-type: none"> <li>&gt; May/may not be offered pay often are paid</li> <li>&gt; Academic credit (HS 492) will be given to the student</li> </ul>
<b>Duration/Hours:</b> <ul style="list-style-type: none"> <li>&gt; May be part-time or full-time</li> <li>&gt; Typically lasts between 5-15 weeks</li> <li>&gt; Agreed upon termination date</li> </ul>	<b>Duration/Hours:</b> <ul style="list-style-type: none"> <li>&gt; May be part-time or full-time</li> <li>&gt; Typically lasts between 5-15 weeks</li> <li>&gt; Agreed upon termination date</li> </ul>
<b>Employer's Role:</b> <ul style="list-style-type: none"> <li>&gt; Mentors the student and is able to show them the 'business side' as well as teach them job skills</li> <li>&gt; Exposes the student to all segments of the business</li> <li>&gt; Provides the opportunity for a student to develop a project</li> </ul>	<b>Mentor's Role:</b> <ul style="list-style-type: none"> <li>&gt; Mentors the student and assists the student in defining a research project of their own to conduct</li> <li>&gt; Explains and demonstrates research ethics</li> <li>&gt; Trains student on protocols and equipment use including laboratory safety</li> </ul>
<b>University Role:</b> <ul style="list-style-type: none"> <li>&gt; Faculty help supervise students as well as guide and prepare them for the internship</li> </ul>	<b>Department's role:</b> <ul style="list-style-type: none"> <li>&gt; Faculty help supervise students as well as guide and prepare them for the research experience</li> </ul>





## Expectations of Students

Prior to the student beginning the research experience, the employer/researcher and student need to discuss the requirements and expectations of the research experience.

This includes:

- > Growth Plan
- > Dress requirements
- > Hours of work
- > Duties, research project
- > Privacy procedures and policies
- > Other miscellaneous items required for successful research experience

### Student Growth Plan:

This document is completed on-line and defines the student's responsibilities, learning opportunities, and student directed research project. The student-directed project should benefit the research program and align with the student's skills and interests.

- > The student and employer/researcher will complete a growth plan that outlines these expectations on our database.
- > Students are required to work a minimum of 45 hours for each 1 credit (135 hours to receive 3 academic credits). We suggest students work 9-14 hours a week over a 16-week semester with a portion of this time devoted to work on a student-directed project.
- > The student's research project should be developed and implemented by the student but should benefit both the student and the employer/researcher.
- > The student and employer/researcher should work together to develop the work schedule, project, and start/end dates.
- > The student will be compensated for their time in the form of hourly wages or stipend unless no compensation is agreed upon by the student and employer/researcher.
- > An hourly wage range of \$10-\$15 is suggested unless housing or a housing stipend is provided.
- > The student will be expected to evaluate the performance of employer in providing a high-quality research project.



## Expectations or Employers/Researchers

Research experiences are most meaningful to students when a wide variety of learning opportunities are provided in a structured and professional environment. These experiences also influence a student's likelihood to pursue graduate school. Therefore, students are encouraged to seek research experiences in fields of study that interest them.

The student should be supervised by an experienced employer/researcher and have the opportunity to apply classroom information to their research responsibilities.

Outside experiences such as attendance at field days and research conferences are excellent ways for employers to enrich the student research experience.

- › The research employing the student will provide a well-rounded, learning experience. This includes not only an understanding of day-to-day research operations but also allowing the student to participate in designing and implementing their own project.
- › Prior to the student beginning the research experience, the employer/researcher and student need to discuss the requirements and expectations of the experience.

This includes:

- › MOA
- › Growth Plan
- › Dress requirements
- › Hours of work
- › Duties, work assignment
- › Safety procedures and policies
- › Other miscellaneous items required for successful research experience

- › The student and employer will complete a growth plan that outlines these expectations on our web page.
- › Students are required to work a minimum of 45 hours for each 1 credit (135 hours to receive 3 academic credits). We assign students work 9-14 hours a week over a 16-week semester with a portion of this time devoted to developing a student taught lesson.
- › The student project should be developed and implemented by the student but should benefit both the student and employer/researcher.
- › The student and employer/researcher should work together to develop the work schedule, project, and start/end dates.
- › The student will be compensated for their time in the form of hourly wages or stipend unless no compensation is agreed upon by the student and employer/researcher.
- › An hourly wage range of \$10-\$15 is suggested unless housing or a housing stipend is provided.
- › The employer/researcher needs to provide a supervisor that is well experienced in the research program and will oversee the work of the student on a regular basis.
- › The instructor will be expected to evaluate the performance of the student. In addition, the instructor is an advisor/mentor for the student. See Employer's/Instructor's Three-Week and Exit Evaluation of Student by Employer/Instructor





## Research Experience Timeline

STUDENTS	EMPLOYERS
<p>Middle of a Semester</p> <ul style="list-style-type: none"> <li>&gt; Students will search for research programs that are interesting to them.</li> <li>&gt; Students will begin applying for prospective research experiences.</li> </ul>	<p>Middle of a Semester</p> <ul style="list-style-type: none"> <li>&gt; Employers should be ready to talk to interested students.</li> <li>&gt; Employers should think about projects for student to complete.</li> <li>&gt; Employer will evaluate potential student researcher candidates and request interviews.</li> </ul>
<p>End of a Semester</p> <ul style="list-style-type: none"> <li>&gt; Interviews take place at an agreed upon location.</li> <li>&gt; Students should prepare to interview for multiple positions and send thank you notes upon completion of interviews.</li> </ul>	<p>End of Semester</p> <ul style="list-style-type: none"> <li>&gt; Interviews take place at an agreed upon location.</li> </ul>
<p>Before the end of a semester</p> <ul style="list-style-type: none"> <li>&gt; After the student is selected, employers and students need to work together to complete the memorandum of agreement and the growth plan. This needs to be done before the research experience begins and through the Database.</li> </ul>	<p>Before the end of a semester</p> <ul style="list-style-type: none"> <li>&gt; After the student is selected, employers and students need to work together to complete the memorandum of agreement and the growth plan. This needs to be done before the research experience begins and through the Database.</li> </ul>
<p>Semester in which research experience is happening</p> <ul style="list-style-type: none"> <li>&gt; Students complete final project OR written analysis as determined by their growth plan.</li> <li>&gt; Students complete employer evaluation.</li> <li>&gt; Students prepare their final presentation to be presented in fall semester.</li> </ul>	<p>Semester in which research experience is happening</p> <ul style="list-style-type: none"> <li>&gt; Students begin work at organization.</li> <li>&gt; Set up a date for 3-week check in with career experience coordinators.</li> <li>&gt; Complete 3-week evaluation.</li> <li>&gt; Complete student exit evaluation.</li> <li>&gt; Meet with students throughout the research experience to discuss progress and check-in.</li> </ul>



## Course Registration

Students desiring academic credit for their research experience must register for HS 493. If you complete your research experience in the summer, register for HS 493 in the Fall. If you participate in your research experience during the regular academic year, register for HS 493 during the semester you are completing your research experience.

## Research Experience Search

Finding a research experience is not always an easy task. The Department of Horticultural Sciences has several different options to help you.

### Horticulture Student Career Explanation Database

The Horticulture Database is available only for Horticultural Science and Agroecology students. Below are the steps you should follow to access this database:

- > Go to the NC State Department of Horticultural Science Website: <https://cals.ncsu.edu/horticultural-science>
- > Click on the Students dropdown menu
- > Select Career Experiences
- > Click on Student Career Exploration Database

### Family and Friends

You can also reach out to people you know in your community. Commercial research facilities are eligible for research experience sites. However, these enterprises must still complete all of the necessary paperwork. In addition, students who complete research experiences with businesses where they have previously worked must do so with a clear expectation of how the experience will be different.

### E-Pack

E-Pack is the search engine that is used by everyone at NC State University. You can log-in through mypack portal or by completing a general search for NCSU E-Pack. When searching for a research experience you will need to make sure that you are looking at research specific projects.



# Career Experiences Coordinator's Three-Week Evaluation of Student Researcher

\*\*\*Completed through database

Date: \_\_\_\_\_

Start Date of RE: \_\_\_\_\_

Student's Name: \_\_\_\_\_

Supervisor/Title: \_\_\_\_\_

Company: \_\_\_\_\_

This rating by the supervisor is very valuable to the student. It provides an objective evaluation of their ability, characteristics and growth, and identifies areas requiring improvement. Please select the response in each category which best describes the student research. Please discuss the evaluation with the student.

Please indicate the student's top two (2) strengths during the course of his/her research experience, with examples:

1. \_\_\_\_\_

2. \_\_\_\_\_

Please indicate at least one (1) opportunity for improvement for the student:

1. \_\_\_\_\_

.....

Please rate the student in each of the following categories (1 = low, 5 = high):

How well is the student completing the work tasks (in growth plan) so far in the research experience:

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

Student's willingness and motivation to learn, to take on new projects, and develop skills:

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

How the student's attitude is toward his/her work:

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

Describe the progress of the student's lesson as well as what still needs to be accomplished:

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# Career Experience Coordinator's Three-Week Evaluation of Student Researcher – Part 2

\*\*\*Completed through database

Please indicate how well the student has demonstrated each of the following skills (1 = not at all, 5 = very strongly). See page 6 for a more detailed description of the various skill sets.

Communication skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Decision making/Problem solving:

1

2

3

4

5

Comment: \_\_\_\_\_

Self-Management Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Teamwork Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Professionalism Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Leadership Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

What new technical skills or research area knowledge has the student gained so far? Please describe them here: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Additional comments:

\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



Employer Signature:\_\_\_\_\_

Date:\_\_\_\_\_

Student Researcher Signature:\_\_\_\_\_

Date:\_\_\_\_\_

# Employer/Researcher's Three-Week Evaluation of Student Researcher

\*\*\*Completed through database

Date: \_\_\_\_\_

Hours Completed to Date: \_\_\_\_\_

Student's Name: \_\_\_\_\_

Supervisor's Name: \_\_\_\_\_

Company: \_\_\_\_\_

Employer, please complete the following evaluation by the end of the third week of work for the student researcher. Please rate the student in each of the following categories (1 = low, 5 = high):

How well is the student completing the work tasks (in growth plan) so far in the research experience?

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

Student's willingness and motivation to learn, to take on new projects, and develop skills:

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

How the student's attitude is toward his/her work:

1                      2                      3                      4                      5

Comment: \_\_\_\_\_

Describe the progress of the student's project as well as what needs to be accomplished:

---

---

---

# Employer/Researcher's Three-Week Evaluation of Student Researcher – Part 2

\*\*\*Completed through database

Please indicate how well the student has demonstrated each of the following skills (1 = not at all, 5 = very strongly). See page 6 for a more detailed description of the various skill sets.

Communication skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Decision making/Problem solving:

1

2

3

4

5

Comment: \_\_\_\_\_

Self-Management Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Teamwork Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Professionalism Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Leadership Skills:

1

2

3

4

5

Comment: \_\_\_\_\_

What new technical skills or research area knowledge has the student gained so far? Please describe them here: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Additional comments:

\_\_\_\_\_  
\_\_\_\_\_



Employer Signature: \_\_\_\_\_

Date: \_\_\_\_\_

# Exit Evaluation of Student by Employer/Researcher

\*\*\*Completed through database

Date: \_\_\_\_\_

Start Date of Research Experience: \_\_\_\_\_

Student's Name: \_\_\_\_\_

Supervisor/Title: \_\_\_\_\_

Company: \_\_\_\_\_

This rating by the supervisor is very valuable to the student. It provides an objective evaluation of their ability, characteristics and growth, and identifies areas requiring improvement. Please select the response in each category which best describes the student researcher. Please discuss the evaluation with the student.

Please indicate the student's top three (3) strengths during the course of his/her research experience, with examples:

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

Please indicate at least two (2) opportunities for improvement for the student:

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

.....

Please rate the student in each of the following categories (1 = low, 5 = high):

How well is the student completed certain tasks (in growth plan):

1

2

3

4

5

Comment: \_\_\_\_\_

Student's willingness and motivation to learn, to take on new projects, and develop skills:

1

2

3

4

5

Comment: \_\_\_\_\_

Career Readiness of Student:

1

2

3

4

5

Comment: \_\_\_\_\_

# Exit Evaluation of Student by Employer/Researcher

\*\*\*Completed through database

Please indicate how well the student has demonstrated each of the following skills (1 = not at all, 5 = very strongly). See page 6 for a more detailed description of the various skill sets.

Communication skills:

1 2 3 4 5

Comment: \_\_\_\_\_

Decision making/Problem solving:

1 2 3 4 5

Comment: \_\_\_\_\_

Self-Management Skills:

1 2 3 4 5

Comment: \_\_\_\_\_

Teamwork Skills:

1 2 3 4 5

Comment: \_\_\_\_\_

Professionalism Skills:

1 2 3 4 5

Comment: \_\_\_\_\_

Leadership Skills:

1 2 3 4 5

Comment: \_\_\_\_\_

Technical Skills:

1 2 3 4 5

Comment: \_\_\_\_\_



## Exit Evaluation of Student by Employer/Researcher

\*\*\*Completed through database

## Overall Performance

How would you rate the student based on his/her performance overall?

Please circle or highlight one (1) letter grade.

Poor			Average			Good			Outstanding		
0	1	2	3	4	5	6	7	8	9	10	11

Overall Suggestions or comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

Faculty Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Student Research Signature:\_\_\_\_\_

Date: \_\_\_\_\_

# Employer/Researcher Evaluation by Student

\*\*\*Completed through database

Date:\_\_\_\_\_

Start Date of Research Experience:\_\_\_\_\_

Student's Name:\_\_\_\_\_

Supervisor/Title:\_\_\_\_\_

Company:\_\_\_\_\_

Instructions: Please complete this evaluation fully and completely. Return the evaluation to the career experience coordinator after completion. The career experiences coordinator will share the feedback with the employer.

Please indicate the top three most beneficial work experiences with the employer/researcher:

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_

Please rate the employer/researcher in each of the following categories (1 = low, 5 = high):

How well the employer/researcher helped you meet your goals (from the student growth path):

1                      2                      3                      4                      5

Comment:\_\_\_\_\_

The employer/researcher allowed me to take on new projects and develop skills:

1                      2                      3                      4                      5

Comment:\_\_\_\_\_

My responsibilities and duties here were relevant to my major and increased my knowledge:

1                      2                      3                      4                      5

Comment:\_\_\_\_\_

Overall, I would recommend this research program to another student:

1

2

3

4

5

Comment: \_\_\_\_\_