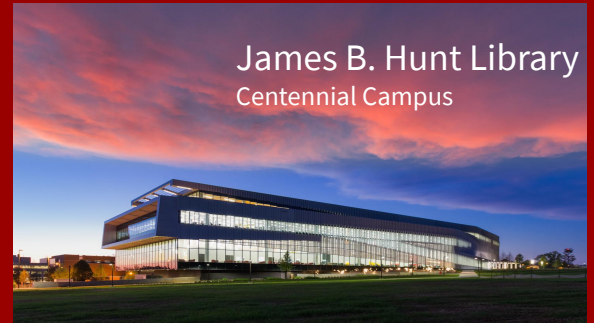


Research Training for Undergraduate STEM Researchers, at Their Convenience

Kristy Borda (she/hers) Research Librarian for Sciences, Engineering, & Biotechnology
Michelle Leonard (she/hers) Research Librarian for Engineering

North Carolina State University
Raleigh, NC

NC STATE University Libraries

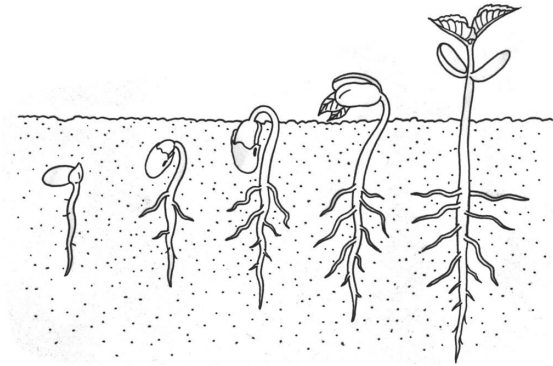


NC STATE
UNIVERSITY

Leading Public R1 Research University

- Powerhouse in science, technology, engineering and math
- Multiple undergraduate research programs to support high-impact education experiences

How the project started



Our Listening Tour

- Invited faculty members across all nine engineering departments
 - Zoom appointments
 - Email
 - Google forms
 - Tremendous interest in our proposal
 - Due to the pandemic, research had shifted out of university's laboratories
-

Listening tour themes

Faculty Requests

- Library resources
- Information searching
- Literature reviews
- Synthesizing information
- Citation management
- Data and visualization skills

Designing the Modules

Sections include videos, downloadable resources, links, and assessments

- Introduction to Library Resources
 - Searching the Literature
 - Becoming a Member of the Scholarly Community
 - Scientific Communication
 - Patents and Standards
 - Data and Visualization
-

Our Website

Can be used in two ways:

- Complete instructional series
 - Self-reported knowledge check at beginning/end
 - Assessments throughout
 - Final assessment
- A learning scaffold we share with students for deeper or refresher learning



[Part One: Introduction to Library Resources](#)



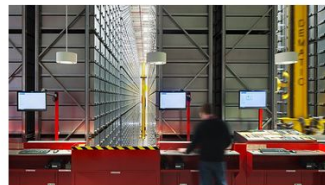
[Part Two: Searching the Literature](#)



[Part Three: Becoming a Member of the Scholarly Community](#)



[Part Four: Scientific Communication](#)



[Part Five: Patents & Standards](#)



[Part Six: Data & Visualization](#)



[Assessment](#)

Take this test to earn your certificate of completion!

Searching for Literature


Snapshot of the types of topics covered

Welcome to Part Two!

In this module you will learn about...

- The many different types of scientific publications
- How to design a search
- Different types of databases and how to use them effectively
- How to use Google Scholar effectively

Problems with the module? Feedback? Further questions? Get in touch at library_engineer@ncsu.edu



Types of Engineering Literature


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Types of Engineering Literature

Types of Engineering Literature

To complete this section...

1. Watch the video about the different types of scholarly literature and the life cycle of an idea.
2. Complete this [quiz](#).



Developing a Search


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REU - Developing a Search

Developing a Search

To complete this section...

1. Watch the video, which will explain how to develop keywords and combine them with boolean operators.
2. After watching the video, save a copy of [this infographic](#) to your computer for reference any time you're building complex searches.
3. Complete this [Boolean challenge](#).



Introduction to Engineering Databases


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Introduction to Engineering Databases

Introduction to Engineering Databases

To complete this section...

1. Watch the video to learn about the different types of databases engineers use.
2. Take the [quiz](#).



Using Databases Effectively

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REU - Using Databases Effectively

Using Databases Effectively

To complete this section...

1. Watch the video, which will explain how to use databases effectively in your research.
2. Take the [quiz](#).

Making Your Google Scholar Searches Effective


Becoming a Member of the Scholarly Community

Snapshot of the types of topics covered

Welcome to Part Three!
In this module you will learn about...

- Plagiarism and how to avoid it
- Organizing your citations and simplifying your bibliographies through citation management software
- ORCID, an important tool for every scholar to use

Problems with the module? Feedback? Further questions? Get in touch at library.support@ncsu.edu




Plagiarism

Plagiarism

To complete this section...

1. Watch the video to learn about what plagiarism is and how to avoid it.
2. Try to pass the [plagiarism quiz!](#)




Citation Management

Citation Management

To complete this section...

1. Watch the video, which will explain what a citation manager is and why you want to use one.
2. Download and begin using a citation manager! (If you're already using a citation manager, skip to the third step to upload a screenshot)

- First, choose a software. [This page](#) on the library website gives you different options. Then go to the program's website, create an account, and download any software that you need. (Note: Download plugins where appropriate so that you can write and cite automatically)
- Second, add a document to your library. You can use a PDF that's already on your computer or [download this one](#).
- Third, submit a screenshot of your citation manager showing the uploaded document. [JCLB](#) [JCLB](#) Unsure how to take a screenshot? [Click here](#).



Intro to ORCID

ORCID

To complete this section...

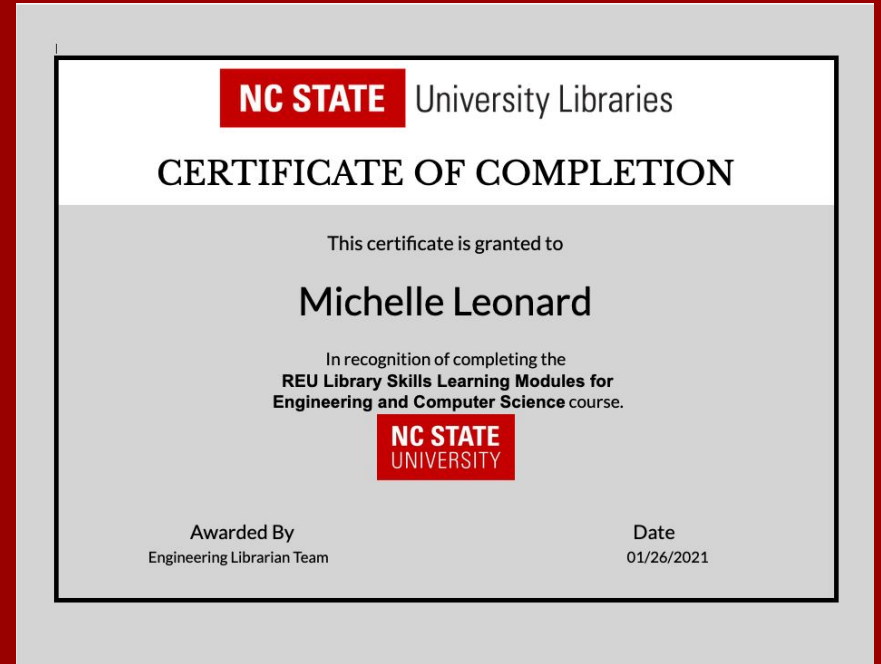
1. Watch the video, which will explain what ORCID is and why you want to sign up for it.
2. Create your ORCID iD
 - First, go to <https://orcid.org/register> and register for an account.
 - Second, take a screenshot of your new profile and upload it [at this link](#).

Other Resources

[Code of Ethics for Undergraduate Researchers](#)

Final Assessment

Certification



29 certificates earned
(27 of those were in summer 2021)

Feedback

from faculty

“It captures everything that a new researcher would need to know.”

Dr. Kanton Reynolds, Park Faculty Scholar and ISE Director of Undergraduate Programs

“The Undergraduate Researcher Library Skills modules look like a fantastic resource. I will definitely share it with undergraduate research assistants in my department.”

Dr. Lucie Guertault, Assistant Professor in Biological & Agricultural Engineering

“We'd like to direct entry-level grad students, in addition to our UG researchers, to these resources.”

Dr. Ranji Ranjithan, CCEE Associate Head and Director of Graduate Programs

Feedback

from students

“Before going through these modules, I was unaware of all the resources that are available to us for free. Now I know that there is help in case I need it.”

“There is a vast amount of knowledge at student's fingertips, and I will definitely begin using this to the best of my ability.”

“I had no idea that the Libraries offered so many resources! I wish that ALL students would learn more about it.”

Partnerships



Required for REU programs in:

- Biotechnology
- Industrial & Systems Engineering
- Civil, Construction, & Environmental Engineering
- Computer Science

Unexpected implementations!

- Graduate Writing Center Certificate

Future Plans

responding to feedback

Improvements to the website will include

- Adding videos
- “Humanizing” the platform
- Improve accessibility & universal design

Future Plans



Full launch in Fall 2021

Continuous assessment &
improvement

Questions?

Get in touch!



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Modules Link