



# Department of Chemistry Undergraduate Research Info

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# What is research?

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Apply experience and knowledge to contribute to unresolved scientific problems and fill science knowledge gaps

Formulate an investigatory plan of inquiry to solve a problem

Conduct experiments/computations to address problem, analyze & interpret results

Share discoveries and knowledge to peers





# Benefits of research

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## Course credit

- 391/2, 491/2
- Three credits required for B.S. Chemistry or Biochemistry concentration
- 3 credits for Natural Science upper-level elective

## Financial

- Research grants
- Potential stipends

## Building skills

- Hands-on lab experience
- Data analysis
- Writing
- Presenting
- Independence

## Contribute knowledge

- Impact the world
- Discover/invent

## Career

- Graduate school
- Medical or professional school
- Bolster resume/C.V.
- Recommendation letters
- Networking

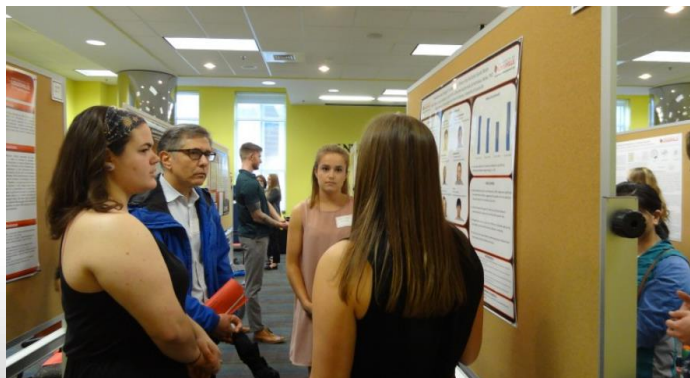
**Lots of fun!**

# Presentations and networking

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## Research events at UofL

- Undergraduate Arts & Research Showcase
- Posters-at-the-Capitol



## Conferences

- Regional ACS
- National meetings



**SERMACS 2021**

When: November 10-13, 2021  
 Where: Sheraton Downtown, Birmingham, AL

Abstracts Open: June 27, 2021  
 Abstracts Close: August 16, 2021  
 Advance Registration Opens: July 6, 2021  
 Advance Registration Closes: September 29, 2021

Chemistry in the Magic City

background photo courtesy of Bob Phillips from Birmingham, AL



# Research grants

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## **Mentored Undergraduate Research and Creative Activities Grant**

- \$1000 for mentor, \$500 for undergraduate
- 1<sup>st</sup> and 2<sup>nd</sup> year students in A&S major
- Deadline: September 6 (January 24, May 16)

## **Summer Research Opportunity Program**

- 10-week research experience
- Preferable sophomore or junior
- \$3500 for living expenses
- Deadline: January 10 – March 12

## **Undergraduate Research Scholar Grant**

- \$300/\$500
- Deadline: any time



# How to get involved in research

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- Visit research pages ([louisville.edu/chemistry/faculty](http://louisville.edu/chemistry/faculty))
- Email professors
  - Experience level
  - Courses taken
  - Why & what you're interested in
  - Plan for course credit (how many hours)
  - Available projects
    - Short-term (one semester) or long-term
- Register (390, 391/2, 491/2): usually before semester

## Research outside of chemistry department

- Identify research mentor
- Write a research plan relating to chemistry
- Review plan with mentor
- Send plan to me for approval
- Have mentor sign form
- Register



# What is required?

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Conduct creative, original research – *not* just a pair of hands in lab or a dishwasher

Time commitment: depends on mentor, typically 3-4 hours per week per credit hour (e.g., 10 h/wk for 3 credit hours)

Maintain lab notebook

Execute project

**Create a plan with your mentor!**

## End of semester report

- Short form
- Report (2-6 pages)
  - Title and abstract
  - Introduction
  - Methods
  - Results and Discussion
  - Data and figures
  - Conclusions
  - References

# Research areas



## Traditional areas

- Analytical chemistry
- Biochemistry
- Inorganic chemistry
- Organic chemistry
- Physical chemistry

## Research specialties

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|---------------------------|------------------------------|
| ▪ Molecular spectroscopy  | ▪ Mechanistic enzymology     |
| ▪ Computational           | ▪ Protein structure-function |
| ▪ Synthesis               | ▪ Bioanalytical              |
| ▪ Organic and medicinal   | ▪ Bioinformatics             |
| ▪ Natural products        | ▪ Electrochemistry           |
| ▪ Metallosulfur           | ▪ Sensors                    |
| ▪ Metal-thiolates         | ▪ Nanomaterials              |
| ▪ Ligand-based reactivity | ▪ Microscopy                 |
| ▪ Inorganic synthesis     | ▪ Electroanalytical          |
| ▪ Organometallic          | ▪ Imaging                    |





## Contact

If you have questions, contact me!

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