Learn about
Major & Minor in Chemistry,
Scholarships,
Research Opportunities,
Summer Internships,
Grad. Schools, & more.
Raffle prizes – lab coats, mugs, and
more swags!!!
Get to Know
Chemistry Faculty &
Fellow Students

Sponsored by ChemClub, & Dept. of Chem.

Idaho State University Land Acknowledgment

In an effort to show respect and recognize their intrinsic ties to the land, we acknowledge that Idaho State University (ISU) is located on the traditional territory of the Shoshone, Bannock, and Paiute peoples, collectively known as the Neve. As a public research university, it is our responsibility to disseminate accurate histories of the regional Indigenous people and of our institutional relationship with them. It is ISU's ongoing commitment to the Shoshone-Bannock Tribes and to our communities that we will collaborate on future educational discourse and activities.
The Department of Chemistry’s Information Session

- We will cover:
  - Why you might want to be a (Bio)Chemistry major/minor
  - Related career options
  - Our degree programs and ChemClub
  - How to get involved in research
  - Scholarships and Fellowships! (Free money!)
  - Graduate programs and when to plan!

National Salary Trend
(ID Median Income $55.6K, National $62K)

- Industry 2019: $120,000, 2016: $115,000
- Government 2019: $114,000, 2016: $108,000
- Academia 2019: $77,000, 2016: $80,000
- Overall median 2019: $100,000, 2016: $98,000
Employment Trend

Unemployment for ACS members was flat since 2016

2019
2.6%

2016
2.6%

Unemployment was highest for chemists with only a bachelor's degree

- Bachelor's: 3.3%
- Master's: 2.1%
- Doctorate: 2.5%

Top 10 Industries

- Pharmaceutical products: 18.6%
- Specialty/fine chemicals: 7.3%
- Other manufacturing: 5.9%
- Federal government (civilian): 4.9%
- National laboratories or research centers: 3.7%
- Professional services—scientific/engineering/law: 3.6%
- Biotech research firms: 3.6%
- Food: 3.3%
- Medical devices/diagnostic products: 3.1%
- Analytical service/testing laboratory: 3.1%
Careers for (Bio)Chemistry Majors

- Industry
  - Research & Development
  - Quality Control/Regulatory
  - Sales/Marketing
  - Manufacturing
  - Support
- Academics
  - Teaching in Higher Education (Ph.D. & MS)
  - Basic Research
  - Chemical Information
  - Primary & secondary schools requires teaching cert.
- Government
  - Environment and Health
  - Law and Policy
  - Military & Law Enforcement
  - Research & Development

- Non-profit
  - Chemistry in the Arts
  - Environmental Protection
  - Public Health
  - Public Information & Outreach
  - Regulatory Affairs
  - Science/Education Policy
- Technical or Science Writing
- Software Engineering
- (Bio)Medical & Pharmaceutical Fields
- Consulting

Technical Disciplines in Chemistry

- Analytical
  - Agricultural & Food
  - Computational Chemistry
  - Forensics

- Organic
  - Paint, Pigments, and Coatings

- Physical
  - Astrochemistry
  - Cheminformatics
  - Geochemistry
  - Nanochemistry
  - Personal Care

- Biochemistry
  - Biotechnology
  - Crystallography
  - Materials
  - Nuclear
  - Textiles
  - Chemical Engineering
  - Dyes, Pigments and Inks
  - Medicinal
  - Oil and Petroleum
  - Water

Applied Areas of Chemistry
Degree programs and Opportunities for (Bio)Chemistry Majors

Chemistry Degrees at ISU

- BS in Chemistry
- BS in Biochemistry
- BA in Chemistry
- BS/MS in Chemistry*
  - Apply by deadline for funding consideration
  - 2-3 years in BS + 2-3 years in BS/MS
- MS in Chemistry*
- Ph.D. in Applied Science and Engineering*
- Minor in Chemistry

* Conduct research in any sub-areas of Chemistry, including Biochemistry
What do I gain with a (Bio)Chemistry degree?

- Scientific and numerical skills
- Curiosity
- Organizational skills
- Attention to detail
- Patience and determination
- Research experience
- Adaptability
- Analytical skills
- Written and oral communications
- Sense of humor not included

Funding for BS/MS & MS in Chemistry

- What are the advantages of entering the BS/MS Program?
  - Earn both BS and MS in Chemistry in five years.
  - Gain valuable research experience and an advanced degree.
  - Funded positions require teaching and include a tuition/fee and a stipend of ~$12K/year for up to three years. (Students may also join the program as an Research Assistant.)
  - Upon graduation, every one of our BS/MS students who sought employment found immediate employment (most had multiple offers from which to choose from).
  - We have a 100% enrollment rate among graduating BS/MS students pursuing a Ph.D. or a professional degree.
- Can apply in the 2nd year of your Chemistry curriculum.
  - Application deadline is on April 1.
ChemClub – Be a part of the Solution!

- Opportunity to try new & exciting RXNS
- Gain service and leadership experiences
- Reach out to local K-12 schools by performing demos
- A chance to socialize with professors and classmates outside of classrooms
- A chance to compete in ACS events such as ChemVention
- Chemistry is FUN

- Meetings (with free lunch!): Fridays 12:00-12:50 pm in Chemistry Study Room- PSC 248

Undergraduate Research

"See – it works in my fantasy research league."
Undergraduate Research

The faculty of the Chemistry Department believes very strongly that high-quality undergraduate student-faculty collaborative research is a vital component in the education of a (bio)chemist. Additionally, research experience is an important component of pre-professional training, strongly recommended or required by Pharmacy and Medical Schools.

Research Areas

<table>
<thead>
<tr>
<th>Category</th>
<th>Faculty Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical</td>
<td>Dr. John Kalivas; Dr. Jeff Rosentreter</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>Dr. Caryn Evilia; Dr. Cori Jenkins</td>
</tr>
<tr>
<td>Environmental</td>
<td>Dr. Jeff Rosentreter</td>
</tr>
<tr>
<td>Inorganic</td>
<td>Dr. Andrew Holland; Dr. Cori Jenkins; Dr. Joshua Pak</td>
</tr>
<tr>
<td>Organic</td>
<td>Dr. Andrew Holland; Dr. Joshua Pak; Dr. Leslie Nickerson</td>
</tr>
<tr>
<td>Physical</td>
<td>Dr. Lisa Goss; Dr. Rene Rodriguez</td>
</tr>
<tr>
<td>Materials</td>
<td>Dr. Andrew Holland; Dr. Joshua Pak; Dr. Cori Jenkins</td>
</tr>
<tr>
<td>Nuclear</td>
<td>Dr. Lisa Goss; Dr. Cori Jenkins, Dr. Joshua Pak; Dr. Rene Rodriguez</td>
</tr>
</tbody>
</table>
More about Undergraduate Research

- Web Guide to Research for Undergraduates (WebGURU at Northeastern)
  - Interactive web-based tool to assist undergraduates navigate the hurdles of an undergraduate research experience.
- ACS.org (search for Undergraduate Research in Chemistry Guide)
- Benefits include
  - Learn valuable skills (e.g. written and oral communication skills)
  - Improve probability of receiving scholarships and awards, e.g., NSF Graduate Fellowships
  - Travel to regional, national, and sometimes international meetings to present posters and talks

American Chemical Society Spring Meeting in San Francisco 2016

Research Fellowships @ ISU

- Chemistry - Summer Undergraduate Research Fellowships (C-SURF)
  - The Department of Chemistry awards several Chemistry C-SURF for students to conduct research. Deadline is on second Monday in February. (5 C-SURF were awarded at $2500 in 2021.)
- IDeA Network of Biomedical Research Excellence (INBRE)
  - ISU awards summer paid fellowships ($6000 for 10 weeks) for students pursuing biomedical research career. You can participated in research activities at all Idaho universities and colleges. (Application deadline Nov. 2, 2021 for summer 2022)
- McNair Scholars Program for Underrepresented Students
  - Assist students who wants to pursue Ph.D. after BA or BS
  - Summer Research Stipend and other professional development opportunities
**Undergraduate Research - NSF-REU**

- NSF-REU programs are 8-10 week undergraduate chemical research programs hosted at 80-100 sites around the country.
- There are also some international (Asia and Europe) sites and many more interdisciplinary programs.
- Each program pays a stipend (~$6K), housing, and travel expenses.

- Application deadlines are generally in Jan. - March
- Application portals open between Nov. – Dec.

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**Undergraduate Research($) Elsewhere**

- BYU & Utah State University
- DOE Science Undergraduate Laboratory Internships (SULI) (e.g. INL)
- DOD Research Laboratories
- AMGEN Scholars
- National Institute of Health
- Environmental Protection Agency
- NASA Research Laboratories
- Department of Agriculture
- National Institute of Standards and Technology
- Department of Homeland Security
- Nuclear Regulatory Commission
- Local Industries (see displays in this building)
- More at [www.pathwaystoscience.org/undergrads.aspx](http://www.pathwaystoscience.org/undergrads.aspx)
Planning for Research Opportunities

• Consult with your faculty advisor
• **Start early** – many deadlines are early during winter break or in Spring Semester (Dec. – Feb.)
• General required materials include:
  • Resume
  • Letters of recommendation (at least 2 from Chemistry faculty)
  • Personal statement
  • Transcript
Scholarships @ ISU CHEM
(www.isu.edu/chem/scholarships.shtml)

• Other Chemistry/Biochemistry Scholarships at ISU (Deadlines in Spring)
  • Chemistry Endowment Fund
  • Pattie Family Scholarship
  • Kasiska Health Science Scholarship

• More scholarship information at www.isu.edu/scholar/list_scienceandengineering.shtml

Other National Scholarships

• American Chemical Society Scholars Program—minority
• American Chemical Society SEED Scholarship—high school
• American Indian College Fund
• Barry M. Goldwater Scholarships
• Environmental Protection Agency Fellowships
• Hispanic Scholarship Fund Scholarship Opportunities
• Knowles Science Teaching Foundation (KSTF) Science & Mathematics Teaching Fellowships
• NASA Aeronautics Scholarship Program
• National Institutes of Undergraduate Scholarship Program
• Naval Research Enterprise Internship Program (NREIP)
• NSF Developing Global Scientists and Engineers
Graduate School – IT’S FREE!

• Ph.D. programs take 4-7 years, and research-centered with some coursework and teaching.
• Graduate schools pay tuition/fees and a stipend (mid $20K to mid $40K).
• Additional fellowships are available to exceptional students (more $)$.
• Once accepted, you are invited for a paid visit.
• **Application Deadlines are usually Dec. – Jan.**
• Some programs accept applications as late as April (especially Canadian Schools)
• All require personal statement, transcript, general GRE (take your first GRE in Nov – Dec)
• Some require Chemistry GRE (plan ahead)
National Graduate Fellowships

• NSF Graduate Research Fellowships include:
  • Five Year Award
  • $34K Stipend per year for three years
  • $12K Educational Allowance (travel, supplies, etc.)
  • International Research Opportunities
  • Supercomputer access

• More info @ nsfgrfp.org
• Start planning early in your junior year
• Requires a research proposal (2 pages) and a potential mentor/program
• Deadline **Oct. 22, 2021** of senior year or first year of graduate school for 2022 competition! Summer is the best time to prepare.

Other Graduate Fellowships

• National Defense Science and Engineering Graduate Fellowship (NDSEG) - $38,400/year for 3 years + (tuition, fees, health insurance, and $5K travel budget
• Fulbright Scholars Program
• NIH Pre-doctoral Fellowships
• National Minority STEM Fellowship Program
• DOE Office of Science Graduate Fellowship
• DHS Fellowship
• EPA Fellowships
• Ford Foundation Pre-doctoral Fellowships
• Graduate Women in Science
• NASA Aeronautics Scholarship Program
• NASA ISGC Fellowship
How do graduate schools decide?

- **Academic Record**
  - Grades
  - Courses you have taken
- **History of success**
  - Scholarships and awards
  - Research/Presentations/Publications
- **Extracurricular Activities** (in your field)
  - Service activities
  - Leadership experiences
- **Personal Statement** (related to your field and career goals)
- **Recommendation Letters** (reinforcing your desire, history and academic record)

What can I do now?

- **Know the deadlines!**
- Plan things out and do not rush
- Compile a strong academic record
- Gain research and/or teaching experiences
- Strive for scientific presentations and publications
- Get involved in leadership roles and community service (such as ChemClub & STEMClub)
- Select strong recommenders (get to know faculty members in your department/critical courses)
- Write clear and scientifically-sound essays that:
  - Link your teaching and research experiences
  - Highlight any challenges and achievements
  - Display your passion and motivation for your field of study
- **Get Advised!**
If graduate school is not for you... what are other options?

After BS/BA or MS degree in Chemistry or Biochemistry:

*Jobs in local or national industries.* Check out job opportunity or career opportunity boards on company websites.

**Websites:**  
- [www.acs.org/content/acs/en/careers.html](http://www.acs.org/content/acs/en/careers.html) (American Chemical Society Jobs site)  
- [www.simbhq.org/careers/career-information](http://www.simbhq.org/careers/career-information) (Society for Industrial Microbiology and Biotechnology)

*Jobs in government labs.* Usually require a green card or citizenship. Sometimes need security clearance.

**Website:** [www.usajobs.gov](http://www.usajobs.gov) (US government online job site)

What if you have other talents or interests...

**Teaching:** [www.nsta.org](http://www.nsta.org) (National Science Teachers Association), [www.astc.org](http://www.astc.org) (Association of Science-Technology Centers).

**Art:** [gnsi.org](http://gnsi.org) (Guild of Natural Science Illustrators), [www.ami.org](http://www.ami.org) (Association of Medical Illustrators)


**Writing or communications:** [www.nasw.org](http://www.nasw.org) (National Association of Science Writers), [www.amwa.org](http://www.amwa.org) (American Medical Writers Association)
**If you like teaching kids:** K-12 teacher (degree in education is required), Science Museum educator/curator

**Websites:** [www.nsta.org](http://www.nsta.org) (National Science Teachers Association), [www.astc.org](http://www.astc.org) (Association of Science-Technology Centers)

**If you are artistic:** Science and Medical Illustration and Imaging.

**Website:** gnsi.org (Guild of Natural Science Illustrators), [www.ami.org](http://www.ami.org) (Association of Medical Illustrators)

**If you like writing:** Science and Technical writing.

**Websites:** [www.nasw.org](http://www.nasw.org) (National Association of Science Writers), [www.amwa.org](http://www.amwa.org) (American Medical Writers Association)

**If you have an interest in politics:** Science policy programs

**Website:** [www.aaas.org/programs/science-and-policy](http://www.aaas.org/programs/science-and-policy) (American Association for the Advancement of Science)

**If you have an interest in the Law or legal issues:** Technology transfer programs and patent law


**If you have a passion for business:** company administration, sales programs through chemical/biotech/pharmaceutical companies.

**Websites:** [www.bio.org](http://www.bio.org) (Biotechnology Innovation Organization), [www.aacsb.edu](http://www.aacsb.edu) (International Association for Management Education- a business school aggregate site)

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**Resume vs Curriculum vitae (CV)**

**Resume:** the primary focus is your experience and should be only 1-2 pages (customized).

**Resume resources:**
- [www.acs.org/content/acs/en/careers/career-services/resume.html](http://www.acs.org/content/acs/en/careers/career-services/resume.html)
- [icc.ucdavis.edu/materials/resume/resumecv](http://icc.ucdavis.edu/materials/resume/resumecv)

**CV:** a profile of your scholarly activity – mostly for academic jobs.

**CV resources:**
- [www.acs.org/content/acs/en/careers/career-services/career-pathways/higher-education/curriculum-vitae.html](http://www.acs.org/content/acs/en/careers/career-services/career-pathways/higher-education/curriculum-vitae.html)
- [icc.ucdavis.edu/materials/resume/cv](http://icc.ucdavis.edu/materials/resume/cv)
Thank you for coming!

Questions?