

CHEMISTRY

<http://cos.gmu.edu/academics/undergraduate/majors/chemistry>

Name and description of the field

Chemistry is the branch of natural science that deals with the properties of substances, the changes they undergo, and the natural laws which describe these changes. The B.S in Chemistry offers concentrations in Biochemistry as well as Chemistry Education.

What special skills or abilities are needed to succeed in this major?

Numerical, analytical, and follow-through skills are developed through participation in most chemistry courses and lab courses. Creative skills may be enhanced in special projects in chemistry, instrumental analysis, and/or physical chemistry labs. Computer skills may be developed through computer molecular modeling projects in organic chemistry and physical chemistry.

A student's occupational goals suggest the proper choice of elective courses that will help ensure career success. For a career in industry, courses in economics, communications, computer science, technical report writing, German, French, and/or Russian may be appropriate electives. Students considering graduate education may benefit from courses in mathematics, physics, computer science, and foreign languages. Students considering attending medical or dental school should take biology courses and physics courses.

If both B.A. and B.S. degrees are offered, what are the differences in career/graduate school opportunities?

The B.A. degree in Chemistry is appropriate for secondary teachers and premedical programs. The B.S. program is accredited by the American Chemical Society; students completing the program are certified by the society. Students planning professional careers in chemistry should choose the B.S. program.

Is it possible to minor in Chemistry?

Yes, Chemistry minor requires the successful completion of 16 credit hours at the 300 level or higher.

What are recent graduates doing?

Graduates in Chemistry gain employment, often in federal agencies, consulting firms, or biotech and pharmaceutical firms. Examples include the Naval Research Laboratory, U.S. Geological Survey, the Smithsonian Institute, CVS Pharmacy, and the U.S. Geological Survey. Many with an undergraduate degree pursue graduate work in fields such as:

medicine	biochemistry	dentistry	
engineering (chemical)	veterinary medicine	environmental science	chemistry
geo-chemistry	technical management/administration	oceanography	
pharmacy	teaching		

Specific organizations include: Reston Pediatric, FactSet, US Army, CVS Pharmacy, Lead Tech

Positions include: Clinical Aid, Computer Operator, Research Systems, Graduate Teaching Assistant, Medical Student, Pharmacy Technician, Property Specialist

Chemistry: Sample Job Descriptions for Candidate with a Bachelor's Degree:

Chemist. A high tech R&D firm seeks bachelor's level candidate with two years laboratory experience. The candidate will have an understanding of GLP, an attention to detail for non-routine analytical processes and superior organization skills. Previous GC or HGLC method development experience is a plus.

Risk Assessment Research Assistant. Support human health/ecological risk assessments. Conduct literature and data searches; perform analyses under the guidance of senior staff; and write reports. **Requirements:** B.S. degree in chemistry, environmental science, environmental engineering or math; outstanding academic record. 0 - 2 years experience in the field of environmental science; excellent writing and analytical skills, good oral communication skills; proficiency with PC-based spreadsheet and word processing programs; familiarity with principles of exposure and risk assessment is a plus.

Junior Chemists. Reston firm seeks individuals to edit technical documents. Handle on-line data searching; support regulatory actions; conduct data management and review; draft analytical methods; provide technical work group support; and respond to phone inquiries of a technical nature. **Requirements:** B.S. in chemistry, environmental sciences, or related field; related

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experience; good written and verbal communication skills; and computer literacy.

Research Chemist. Challenging opening in a rapidly growing suburban Maryland pharmaceutical company for an individual with a BS/MS in chemistry or Biochemistry. Ideal candidate should have a minimum of 2 years experience in method development, validation, and implementation of bioanalytical assays. Experience in chromatography and GLP compliance required.

Entry-level Chemical Engineer/Chemist/Environmental Engineer. A consulting firm specializing in providing technical support to government agencies seeks candidate to perform process, pollution prevention, waste treatment evaluations and field sampling support. Candidates should have a BS or MS degree in Chemical or Environmental Engineering or Chemistry with 0 to 3 years experience. Good communication and computer skills are essential. Knowledge of CWA, RCRA, CERCLA, TRI a plus.

Resources for further information:

A key element in effective decision making is having sufficient information about the major or career being explored. Sources of information include people in the field, professional associations relating to the field, faculty and your career services counselor. Below are additional resources to aid in exploration:

Printed Resources: (Career Services Library, 348 SUB1) - <http://careers.gmu.edu/careerlibrary/wheretostart/chem.pdf>

Online Resources: <http://careers.gmu.edu/onlineresources/chem.htm>

Science Related Job/Internship Postings: <http://cos.gmu.edu/students/careerservices> & <http://www.aaas.org/careercenter/>

Networking Resource: <http://www.mentornet.net/>

Pre-Health Resources: <http://prehealth.gmu.edu/> & <http://explorehealthcareers.org/en/index.aspx#> & <http://www.pubinfo.vcu.edu/ahec/>

Professional Associations:

- **American Association for the Advancement of Science** - <http://www.aaas.org/>
- **The American Chemical Society (ACS)** - <http://portal.acs.org/portal/acs/corg/content>
- **Chemistry Club (a student organization)** - http://sa.gmu.edu/student_orgs/orgs.php
- **Mason Student Clubs/Orgs/Societies Science and Technology Umbrella** - http://sa.gmu.edu/student_orgs/orgs.php#stu

What kinds of practical experiences are recommended to explore Chemistry further?

Part-time jobs and internships offer valuable insights into chemistry careers. Consult faculty and bulletin boards in the Chemistry Department and the online and printed resources cited above.

Whom should students contact for further information?

Dr. Gregory D. Foster, Chair Chemistry Department 343 Science & Technology I 703-993-1080	Dr. Emil Chuck Health Professions Advisor Science and Technology I Room 209 echuck@gmu.edu	Academic Advising Center 304 SUB I 703-993-2470	Gemma Scallon Costa University Career Services 348 SUB I 703-993-2370 gcosta2@gmu.edu
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