

CHEMISTRY

GENERAL OBJECTIVES: To support undergraduate and graduate instruction leading to the B.S., M.S. and Ph.D. degrees, and to support faculty research.

SCOPE OF COVERAGE: Language: Emphasis is on English, Russian, and German. Other languages are collected when necessary. Geography: Europe, Australia, Asia, and North America are emphasized. Other areas are collected when appropriate. Chronology: Primary emphasis is contemporary; historical material as well as back runs of journals may be acquired.

TYPES OF MATERIALS: Monographs, periodicals, serials, abstracts and indexes, conference proceedings and symposia, limited audio-visual materials including multi-media. Faculty prefer electronic formats for journals, but archival access is critical. Some advanced general textbooks are purchased to support course reserves and qualifying examinations and to provide background information for those involved in interdisciplinary research.

INTERDISCIPLINARY RELATIONS: Strong interdisciplinary emphasis with Departments of Physics and Biology and with the Biochemistry Department in the Medical School. Some interest in mathematics, computer science, and the Science and Technology in International Affairs Program in the School of Foreign Service.

OTHER RESOURCES: Dahlgren Medical Library on the Georgetown University Medical Campus; Libraries of the Washington Research Libraries Consortium.

OTHER FACTORS: With the exception of some highly specialized areas in physical chemistry, holdings in Chemistry are mostly adequate. In some areas, e.g., pharmaceutical chemistry, we need to keep in mind the strengths of the Medical Library collection and its mission.

Periodical holdings are arranged alphabetically by title in the Science Library (most recent holdings) and in Lauinger Library, and can be retrieved from Riggs Library and the WRLC storage facility. The periodical holdings of the Dahlgren Medical Library are strong in many areas of biochemistry. The Science Library does not duplicate Medical Library journals with the exception of core titles.

The department is strongest in physical chemistry, with faculty doing research in these areas: polyoxometalates; surface science, bimetallic catalysis and interfacial electrochemistry; metal quantum dots; synthetic metals; structure/property relationships of polymers; anisotropic solvents; organic photochemistry and photophysics; transition metal complexes; conducting polymer electrodes; inorganic/organic thin films; nanocrystals of semiconductors; nanochemistry. IR and NMR spectral data are important to several fields.

Faculty members are doing research in these areas of biochemistry and organic chemistry: solution theory and solvent effects on protein structure, function and electron transfer, particularly in iron-sulfur proteins; computer simulations of solvent effects; surface chemistry and surface properties of molecules; transcription factors and DNA-binding proteins; biological membrane transport; biochemical mechanisms of drug resistance; malarial drug resistance and development of new antimalarial drugs; chirality, especially catalytic and stereoselective effects; protein biosynthesis; biomolecular crystal nucleation and growth, especially of cholesterol and uric acid, using X-ray crystallography, atomic force microscopy and computational modeling. The areas of biology of special interest are cell membranes and transduction phenomena, and malarial parasitology.

Legend:

0 = Out of Scope

1 = Minimal Level

1a = Minimal, Uneven Coverage

1b = Minimal, Focused Coverage

2 = Basic Information Level

2a = Basic Information, Introductory

2b = Basic Information, Advanced

3 = Study/Instructional Support Level

3a = Basic Study

3b = Intermediate Study

3c = Advanced Study

4 = Research Level

5 = Comprehensive Level

CL = Current Collection Level

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<i>Call #</i>	<i>Line #</i>	<i>Conspectus Title</i>	<i>CL</i>	<i>GL</i>	<i>Assessment Comments</i>
QD1-65	CHE1	Chemistry (General)	4 E	4 E	
QD11-22	CHE2	History, Biography	3bE	3bE	
QD23.3-26.5	CHE3	Alchemy	3aE	3aE	
QD40-49	CHE4	Study & Teaching	3bE	3bE	
QD71-142	CHE5	Analytical Chemistry	4 F	4 F	Methods of analysis; gas analysis; technical analysis of metals and other materials; water analysis; general works; gas; ion exchange; ligand exchange; liquid; thinlayer; electron diffraction; electrophoresis; fluorimetry instrumental analysis; microchemical analysis; phosphorimetry; molecular emission cavity analysis; thermal analysis
QD81	CHE6	Qualitative Analysis (Organic & Inorganic)	4 F	4 F	
QD95-96	CHE7	Spectroscopy (Applied)	4 F	4 F	Spectrum Analysis [adsorption spectra; atomic spectra; electron paramagnetic microwave ; mossbauer; molecular; nmr; optoacoustic; photoelectron; plasma; raman; uv; x-ray; surface spectroscopy; nonlinear optics and spectroscopy;
QD101	CHE8	Quantitative Analysis (Organic & Inorganic)	4 E	4 E	
QD115-116	CHE9	Electrochemical Analysis	4 E	4 E	
QD117.C5	CHE10	Chromatography	4 E	4 E	
QD117.T4	CHE11	Thermal Analysis	4 E	4 E	
QD146-197	CHE12	Inorganic Chemistry (General)	4 F	4 F	
QD161-169	CHE13	Inorganic Chem. - Nonmetals	3cE	3cE	
QD171-172	CHE14	Inorganic Chemistry - Metals, including Transition	4 F	4 F	Metals. Special Elements
QD189-193	CHE15	Inorganic Chemistry - Salts	3cE	3cE	
QD196	CHE16	Inorganic Polymers	4 F	4 F	Inorganic Polymers. Cyclic Compounds
QD241-441	CHE17	Organic Chemistry (General)	4 F	4 F	

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QD271-291	CHE19	Organic Analysis	4 F	4 F	Operations in Organic Chemistry: Organic synthesis; organic analysis; acylation; elimination reactions; fluorination; hydrogenation; nitration; oxidation; polymerization; rearrangement reactions; ring formation; solvolysis; sulfonation
QD301-315	CHE20	Aliphatic Compounds	4 F	4 F	
QD320-327	CHE21	Carbohydrates	3cE	3cE	
QD330-341	CHE22	Aromatic Compounds	4 F	4 F	
QD375-377	CHE23	Antibiotics	3bE	3bE	
QD380-388	CHE24	Polymers, Macromolecules	4 F	4 F	Conductors
QD399-406	CHE25	Heterocyclic Compounds	4 F	4 F	
QD410-412	CHE26	Organometallic Compounds	4 F	4 F	
QD415	CHE27	Biochemistry & Bioorganic Chemistry - General	4 F	4 F	Porphyrins
QD416-441	CHE28	Natural Products - Terpenes, Resins, Steroids,	1 E	1 E	
QD450-731	CHE29	Physical & Theoretical Chemistry	4 F	4 F	Theory of solution; colloids; chemical compounds structure and formulas; physical properties; complex compounds; acids and bases; models of atoms; stereochemistry
QD462	CHE30	Quantum Chemistry	4 F	4 F	Quantum Chemistry. Atomic and Molecular Weights Isotopes; solid state; molecular crystals; quantum electronics; lasers; nonlinear spectroscopy (optics); optical activity
QD501	CHE31	Conditions & Laws of Chemical Reactions - General	4 F	4 F	Kinetics, dynamics
QD504	CHE32	Conditions & Laws of Chem. React. - Thermodynamics	4 F	4 F	
QD505	CHE33	Conditions & Laws of Chem. React. - Catalysis	4 F	4 F	
QD506-509	CHE34	Surface Chemistry	4 F	4 F	Surface spectroscopy; imaging of surfaces; microscopy
QD510-536	CHE35	Thermochemistry	4 F	4 F	Scanning; tunnelling and atomic force microscopy; photochemistry on surfaces
QD551-575	CHE36	Electrochemistry	4 F	4 F	Ions and ionization, electrolytes electrode phenomena

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QD601-655	CHE37	Nuclear Chemistry	3cE	3cE	
QD701-731	CHE38	Photochemistry	4 F	4 F	Photobiology and photobiochemistry; ultrafast time resolved photochemistry; photochemistry on surfaces
QD901-999	CHE39	Crystallography	4 F	4 F	Liquid crystals, physical properties of crystals; optical properties; x-ray crystallography, crystal defects, crystal growth
GC100-103	GEO61	Seawater	2 E	2 E	
GC109-149	GEO62	Chemical Oceanography	2 E	3aE	
QC173.4	PHY87.12	Properties of Surfaces	3cE	4 E	Scanning tunneling microscopy, atomic force microscopy
QC176.8	PHY91.12	Nanostructures	2 E	4 E	Properties of nanoparticles
QC450-453	PHY101	Spectroscopy (Theoretical) - General	4 F	4 F	
QC454	PHY102	Special Types of Spectroscopy - Atomic, Molecular,	4 F	4 F	
DNC QC454.M6	PHY103	Molecular Spectra	4 F	4 F	
QC879.6-.85	PHY103.12	Atmospheric Chemistry	2 E	3cE	
QE515-516	PHY103.13	Geochemistry	2 E	3bE	
QH345	PHY103.14	Inorganic Biology, Biophysics,Biochemistry	3cE	3cE	Biophysical chemistry
QH505	PHY103.15	Biophysics	3bE	3cE	
QP501-801	PHY103.16	Animal Biochemistry	3bE	4 E	Proteins, amino acids, hormones, enzymes, lipids, nucleic acids, inorganic substances photobiochemistry; photobiology
RC156	PHY103.165	Malaria	3aE	3cE	Biochemistry of malaria
RM300-671.5	PHY103.17	Drugs	2 E	3bE	Pharmacogenetics
RS400-431	PHY103.18	Chemistry, Pharmaceutical	2 E	3bE	
S583-587.5	PHY103.19	Agricultural Chemistry & Chemicals	2 E	3bE	
TA418.78	PHY103.2	Materials as Particles	3aE	4 E	Properties of nanoparticles

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TP	TEC250	Chemical Technology	2 E	3bE	
TP1-154	TEC250.3	Chemical Technology (General)	2 E	3bE	
TP155-156	TEC250.5	Chemical Engineering	2 E	3bE	Special chemical processes
TP200-248	TEC251	Chemicals - Manufacture, Use, etc.	2 E	3bE	Inorganic and organic chemicals and preparations; biotechnology; enzymetechnology
TP1080-1185	TEC270	Polymers & Polymer Manufacture	2 E	3bE	
Z5521-5526	TEC270.12	Chemistry - Bibliography	2 E	2 E	

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