

Chemistry

Pearl 618

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PROGRAM:

Chemical Technology/AAS

FACULTY:

Professors: Zimmerman

Assoc Profs: Brown, Nicolas

Asst Profs: DiMartini, Spellane, Tewani

Chief CLT: Santiago

Sr CLTs: DeFaria

CLTs: Johnson

Associate in Applied Science in CHEMICAL TECHNOLOGY

A degree in chemical technology prepares the student for immediate employment as a chemical technician in industry or for transfer to a baccalaureate program with credit toward a degree in chemistry, pharmacy, toxicology, biochemistry, clinical chemistry, or environmental health science. Previous high school training in chemistry or physics is not required. However, an applicant should have completed at least one year of college-level mathematics as preparation for these programs. The curriculum presents the general concepts of chemistry, physics and mathematics using methods and equipment that are currently employed in industry and the professions.

Courses in chemistry are designed to raise student awareness of the importance of chemistry in today's world. By understanding the principles that govern chemical reactions, students will be able to also understand contemporary environmental issues such as the greenhouse effect, depletion of the ozone layer, and the phenomenon of acid rain. Courses offered in the department serve the needs of the entire College community.

Graduates of this program have found rewarding employment as chemical and research technicians in the following and related fields: pharmaceuticals, food, plastics, petroleum, paints, textiles. Ample opportunity exists for advancement in research, analysis, production and sales. Employers of the graduates of this program include Eastman Kodak Company, Ciba Geigy, Consolidated Edison, Brooklyn Union Gas and Pfizer, Inc.

Those interested in continuing their studies in a college of pharmacy at SUNY at Buffalo or Arnold & Marie Schwartz College of Pharmacy at LIU, for example, upon graduation from

chemical technology should consult with their academic advisers and also take the following courses in addition to those required for the AAS in chemical technology:

- MAT 1475/MA 475
- BIO 1101/BY 101, BIO 1201/BY 201 and BIO 2311/BY 301.1
- Two additional courses in liberal arts

Departmental academic advisers are assigned to all students to aid in both program and career planning.

The College will grant an associate in applied science degree (AAS) with a major in chemical technology upon satisfactory completion of the required 60 credits listed.

REQUIRED COURSES IN THE MAJOR

		Credits
CHEM 1110/CH 110	General Chemistry I	4
CHEM 1210/CH 210	General Chemistry II	4
CHEM 2223/CH 223	Organic Chemistry I	5
CHEM 2323/CH 323	Organic Chemistry II	5
CHEM 3322/CH 322	Analytical Chemistry I	5
CHEM 3412/CH 412	or	
MAT 1475/MA 475	Calculus I or Analytical Chemistry II or	4
BIO 2311/BY 301.1	Calculus I or Human Anatomy and Physiology I	4
CHEM 2411/CH 411	Special Topics in Chemistry	3
Subtotal		30

OTHER REQUIRED COURSES

EG 1101/EG 101	English Composition I	3
EG 1121/EG 121	English Composition II	3
MAT 1375/MA 375 ²	Mathematical Analysis	4
LAP ¹	Literature/Aesthetics/Philosophy	3
PSY 1101/PS 101	Introduction to Psychology	3
PHYS 1433/SC 433	Physics 1.2	4
PHYS 1434/SC 434	Physics 2.2	4
PHYS 2601/SC 601	Introduction to Research	3
SS ¹	Social Science	3
Subtotal		30

TOTAL CREDITS REQUIRED FOR THE DEGREE

60

¹ See page 34 for a detailed explanation of core required courses and categories.

² Students without the requisite math background to enter MAT 1375/MA 375 will be required to take MAT 1175/MA 175 and/or MAT 1275/MA 275 in preparation. This will increase the number of required credits for the degree by up to eight (8).

COURSES:**CHEM 1110/CH 110
General Chemistry I
SCI Core**

3 cl hrs, 3 lab hrs, 4 cr

The basic principles and theories of college chemistry. Topics include matter and energy, periodicity of elements, atomic and molecular structure, bonding, atomic spectra, chemical reactions, gas laws, acids and bases, properties of solutions. *Pre- or corequisites:* MAT 1275/MA 275, ENG 029R/DR 092

**CHEM 1210/CH 210
General Chemistry II
SCI Core**

3 cl hrs, 3 lab hrs, 4 cr

Continuation of General Chemistry I. Solutions, oxidation-reduction reactions, kinetics, ionization, ionic equilibria, pH, buffers, solubility product, hydrolysis, qualitative analysis of cations and anions. *Prerequisite:* CHEM 1110/CH 110

**CHEM 1215/CH 215
Principles of Chemistry I**

3 cl hrs, 3 lab hrs, 4 cr

(For dental hygiene and dental laboratory technology students) Atomic structure, elements, compounds and mixtures, formulas and nomenclature, physical states, bonding, acid-base theory, solutions, gas laws. *Prerequisites:* Eligibility for ENG 029R/DR 092 or CUNY certification in reading and mathematics

**CHEM 2223/CH 223
Organic Chemistry I**

4 cl hrs, 3 lab hrs, 5 cr

Fundamental concepts of nomenclature, formulae, preparation and properties of organic compounds. Modern electronic and molecular orbital theories are introduced. Laboratory experiments illustrate properties and preparation of organic compounds. *Prerequisite:* CHEM 1110/CH 110

**CHEM 2322/CH 322
Analytical Chemistry I**

3 cl hrs, 5 lab hrs, 5 cr

Theoretical and mathematical concepts of both gravimetric and volumetric analyses: quantitative separations, formation and properties of precipitates, use of organic reagents, coprecipitation phenomena, acidimetry and alkalimetry, pH, titration curves,

redox reactions. Practice in fundamental laboratory techniques of gravimetric and volumetric analyses.

Prerequisite: CHEM 1210/CH 210**CHEM 2323/CH 323
Organic Chemistry II**

4 cl hrs, 3 lab hrs, 5 cr

Continuation of CH 223 utilizing mechanistic interpretations of reaction of aliphatic and aromatic hydrocarbons, alcohols, ethers, aldehydes, ketones, acids and amines. *Prerequisites:* CHEM 2223/CH 223

**CHEM 2411/CH 411
Special Topics in Chemistry**

3 cl hrs, 3 cr

An introduction to the fundamental principles of physical chemistry including the states of matter, thermodynamics, thermochemistry, solutions of electrolytes and non-electrolytes, electrochemistry and atomic structure.

Pre- or corequisite: PHYS 1434/SC 434 or PHYS 1442/SC 442**CHEM 3325/CH 325
Chemical Safety**

3 cl hrs, 3 cr

This course focuses on safety as an integral part of the design and execution of experimental work. The course includes an online textbook, online papers from experts in various areas of chemical health and safety and other resources available on the world wide web.

Prerequisites: CHEM 1110/CH 110, CHEM 1210/CH 210, CHEM 2223/CH 223; *pre- or corequisite:* CHEM 2323/CH 323**CHEM 3412/CH 412
Analytical Chemistry II**

2 cl hrs, 6 lab hrs, 4 cr

A continuation of CHEM 2322/CH 322 Analytical Chemistry I, emphasizing modern instrumental methods. Topics include chromatography (HPLC and GC), spectroscopy (FT-IR, NMR, UV-VIS, CG-MS, AA and AE), electrochemical (SIE, conductimetry, polarography, potentiometry), and optical rotary dispersion. Lab studies develop hands-on techniques for real-world problems such as those found in pharmacy, cosmetics, the environment and energy.

Prerequisite: CHEM 2322/CH 322; *pre- or corequisite:* PHYS 1434/SC 434 or PHYS 1442/SC 442

English

Professor Brian Keener, Chair

Namm 512

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FACULTY:

Professors: Feder, Goldsmith, Goodman, Hanley, Huffman, Keener, Lebowitz, Nilles, Patterson, Richardson, Walter, Wasserman

Assoc Profs: Broer, Guida, O'Riordan, Rudden

Asst Profs: Barnett, But, Falvey, Ferrell, Masiello, Mushabac, Noonan, Saddik, Williams

Lecturer: Marshack

ENGLISH

The department of English offers a full range of courses, from developmental work in reading and writing and college English as a second language to introductory and advanced courses in writing and literature. The department participates in a collaborative and creative support system for students preparing for careers or for transfer to other four-year institutions. For these students and for liberal arts majors whose plans do not extend beyond the two-year program, the department has as its mission the enhancement of those imaginative, analytical, reflective and cultural aspects of self generally addressed by liberal studies and within the department's specific purview, through written language.

A student who is deficient in reading or writing skills, as determined by the CUNY Skills Assessment Tests, will be required to take non-credit work either in developmental reading and writing or in college English as a second language, as indicated by the test scores.

All programs of study leading to a degree require the successful completion of ENG 1101/EG 101, English Composition I. An additional number of credits in writing and literature are required for specific degree curricula. The student should be guided in the selection of English courses by the statement of requirements for the specific curriculum.

In the associate degree core, students select one course from the literature, aesthetics or philosophy category (LAP). In the baccalaureate core, students select three courses from LAP, with at least one course from two of the three areas. Students can satisfy the literature core by taking any literature course in ENG/EG or PRS/PR or AFR/AF.

Similarly, the associate core requires communications. ENG 1121/EG 121 or a higher ENG/EG 1 series course can be taken to meet this core distribution. Baccalaureate students must take ENG 1121/EG 121 if not taken at the associate level.

Degree-credit courses offered by the English department are divided into four categories. These are identified by numerical codes:

Series	Categories
1000	First Year Writing Courses
2000	Second Year Courses
3000	Third Year Courses

College English as a Second Language (ESOL) courses and Developmental Reading courses are offered through the department of English.