

DEPARTMENT OF CHEMISTRY AND PHYSICS

Head of the Department: Professor Blanchard

Professors: Blanchard, Doughty, Munchausen, Yoshida

Associate Professors: Allain, Dolliver, Elbers, Norwood, Parkinson, Temple, Voegel

Assistant Professors: Fotie, Kim, Li, Sommerfeld

Instructors: Ladogana

The Department of Chemistry and Physics offers four-year curricula in both Chemistry and Physics. Since the Chemistry Department is approved by the American Chemical Society (ACS), chemistry graduates may receive diplomas certified by the ACS. Pre-professional programs in engineering, medicine, dentistry, optometry, and pharmacy are also offered.

Students in Medicine and Dentistry are encouraged to complete the requirements for a degree before entering a medical or dental school. However, in the event that a student is accepted into medical or dental school prior to receiving the baccalaureate degree, that student may still become a candidate for the Bachelor of Science degree from Southeastern Louisiana University by completing the following requirements. The student must: (1) complete 90 credit hours (the last 30 in residence), (2) complete 20 hours of chemistry above the freshman level (all chemistry courses must be chosen from those courses required of chemistry majors), (3) complete the Board of Regents General Education Requirements, (4) satisfactorily complete a course of study at either medical or dental school, and (5) be recommended by the SLU Medical Evaluation Committee. At the beginning of the student's final year of medical or dental school the student must: (1) request that the Medical Evaluation Committee recommend her/him to the head of the Department of Chemistry and Physics for graduation, (2) secure and submit an application for graduation from the Southeastern Louisiana University's Registrar's Office, and (3) pay the diploma fee at the time the completed application is submitted to the Controller's Office.

A similar program exists for Pre-engineering students. The student must: (1) complete 90 credit hours (the last 30 in residence), (2) complete 20 hours of chemistry above the freshman level including Chem 395 and Clab 391 (all chemistry courses must be chosen from those courses required of chemistry majors) or 28 hours of physics at the 200 level or above (all courses must be chosen from those required of physics majors), (3) complete the Board of Regents General Education Requirements, (4) satisfactorily complete an Engineering Degree Program. At the beginning of the student's final year in the Engineering program, the student must (1) request Departmental evaluation of his/her record, (2) secure and submit an application for graduation from the Southeastern Louisiana University's Registrar's Office, and (3) pay the diploma fee at the time the completed application is submitted to the Controller's Office.

CHEMISTRY SAFETY POLICY

Laboratories are an integral part of all curricula in the Department. A copy of the safety regulations is provided to every student during the first lab class. Any student who violates the safety policy of the Department is subject to dismissal from the laboratory and withdrawal from the course in which the violation occurred. Departmental policy also requires that any student who drops the lecture must also drop the corresponding laboratory.

PLACEMENT IN CHEMISTRY 121

Students desiring placement in Chemistry 121 must meet at least one of the following conditions.

1. Enhanced ACT mathematics standard score of 25 or higher; or
2. Satisfactory completion of Mathematics 155 or 161 with a grade of "C" or better; or
3. Satisfactory completion of Chemistry 120; or
4. Satisfactory score on the Departmental Placement Test which is administered during the orientation period; or
5. Consent of Department Head.

CHEMISTRY

Chemistry is the study of the composition and interaction of all substances. Areas of study range from chemical and instrumental analysis of mixtures to synthesis and characterization of polymers to molecular modeling to the chemistry of the human body and to computational chemistry. The degree program in chemistry at Southeastern is designed to offer the student comprehensive training in modern chemical principles in preparation for a career in industry or the health professions or for graduate study in chemistry or related fields. The study of chemistry is also important for fostering the scientific literacy of students in other disciplines, such as environmental science, law, education, and business.

A Major in Chemistry will be granted upon satisfactory completion of 33-49 hours of Chemistry. Candidates for a Major in Chemistry must obtain a minimum grade of C (or better) in the Chemistry core curriculum which includes CHEM 121, CHEM 122, CHEM 251, CHEM 265, CLAB 123, CLAB 124, CLAB 254, and CLAB 267.

A Minor in Chemistry may be obtained by completing 21 semester hours of chemistry with a GPA of 2.0 in those courses. Applicable courses for the minor are as follows: Chemistry 121-123, Chemistry 122-124, Chemistry 251-254, Chemistry 265-267, Chemistry 266-268, Chemistry 395/391, Chemistry 396/392, Chemistry 471/473, Chemistry 481/485, and Chemistry 482/486.

In order to better meet the needs of the diverse student population, five concentration areas are offered in chemistry. They differ primarily in the balance between the number of hours of chemistry and the number of elective hours required. Which one a given student should choose will depend on their career goals. Even if it is not a degree requirement, all students should consider the benefits of their involvement in supervised undergraduate research (CLAB 411) sometime during their Junior or Senior years.

CHEMISTRY PROGRESSION POLICY

Students pursuing the degree of Bachelor of Science in Chemistry must meet both of the following progression standards:

- Students may not repeat any of the following courses more than once: CHEM 121, CHEM 122, CLAB 123, CLAB 124, and MATH 200.
- Students must successfully complete CHEM 121, CHEM 122, CLAB 123, CLAB 124, and MATH 200 with a grade of "C" or better by the end of the 4th regular semesters following the declaration of a major in chemistry.

Students with exceptional circumstances must have an alternative progression plan approved by the Department Head. Students who do not meet these standards will not be allowed to continue in the chemistry major.

CURRICULUM IN CHEMISTRY LEADING TO THE DEGREE OF BACHELOR OF SCIENCE AMERICAN CHEMICAL SOCIETY (ACS) CONCENTRATION

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
††Chemistry 121	3	††Chemistry 122	3
††Chemistry Lab 123	1	††Chemistry Lab 124	1
Library Science 102	1	English 102 or 122H or 124H	3
English 101 or 121H or 123H	3	Math 201	5
Math 200 ¹	5	General Biology 151	3
Communication 211	3	Biology Lab 152	1
Southeastern 101	2		
	18		16

SECOND YEAR

Physics 221	3	††Chemistry 266	3
Physics Lab 223	1	††Chemistry Lab 268	1
††Chemistry 265	3	Physics 222	3
††Chemistry Lab 267	1	Physics Lab 224	1
English 230,231, or 232	3	††Chemistry 251	3
Arts Elective ²	3	††Chemistry Lab 254	2
		Computer Science 120 or 161	3
	14		16

THIRD YEAR

†Chemistry 395	3	Foreign Language ³	3
†Chemistry Lab 391	1	Social Science ⁴	3
†Chemistry 410	1	†Chemistry 396	3
†Chemistry 452	3	†Chemistry Lab 392	1
†Chemistry Lab 453	2	Elective	3
Foreign Language ³	3		
	13		13

FOURTH YEAR

†Chemistry 471	3	†Chemistry 401	1
†Chemistry Lab 474	2	†Chemistry 404, 412, 462, 482, 491 or 492	3
†Chemistry 481	3	†Chemistry 404, 462, 482, 491 or 492	3
†Chemistry Lab 485	1	Electives	7
History Elective.....	3		
Social Science ¹	3		
†Chemistry Lab 411	1		
	16		14

Total semester hours required 120

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of free electives.

Concentration 1 is strongly recommended for those students who may plan to attend graduate school in chemistry. Students who complete the ACS Certified Curriculum will receive, in addition to their diploma, a certificate from the American Chemical Society.

¹Math 161 and Math 165 may be used as electives for those student's whose Math ACT score is insufficient for direct entry into Math 200.

²Must be selected from Visual Arts, Music, Theater, or Dance.

³Must be selected from the same language.

⁴Must be selected from Economics, Geography, Anthropology, Political Science, Psychology, or Sociology. One course must be at the 200 level or above.

†All Chemistry courses specified above will be used to calculate the major GPA which must be a degree 2.0.

††Chemistry core curriculum course; grade of "C" or better required. This course will also be used to calculate the major GPA which must be a degree 2.0.

CURRICULUM IN CHEMISTRY LEADING TO THE DEGREE OF BACHELOR OF SCIENCE BIOCHEMISTRY CONCENTRATION

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
††Chemistry 121	3	††Chemistry 122	3
††Chemistry Lab 123	1	††Chemistry Lab 124	1
Library Science 102	1	English 102 or 122H or 124H.....	3
English 101 or 121H or 123H	3	Math 201	5
Math 200 ¹	5	General Biology 151	3
Communications 211	3	Biology Lab 152.....	1
Southeastern 101	2		
	18		16

SECOND YEAR

Physics 221	3	††Chemistry 266	3
Physics Lab 223	1	††Chemistry Lab 268	1
††Chemistry 265	3	Physics 222	3
††Chemistry Lab 267	1	Physics Lab 224	1
English 230, 231, or 232	3	††Chemistry 251	3
Arts Elective ²	3	††Chemistry Lab 254	2
		Computer Science 120 or 161	3
	14		16

THIRD YEAR

†Chemistry 395	3	Foreign Language ³	3
†Chemistry Lab 391	1	Social Science ⁴	3
†Chemistry 410.....	1	†Chemistry 396.....	3
†Chemistry 452	3	Concentration Elective ⁵	4
†Chemistry Lab 453.....	2		
Foreign Language ³	3		
	13		13

FOURTH YEAR

Concentration Elective ⁵	3	†Chemistry 401	1
Social Science ⁴	3	†Chemistry Lab 411	1
History Elective.....	3	†Chemistry 482	3
Electives	3	†Chemistry Lab 486.....	1
†Chemistry 481	3	Electives	8
†Chemistry Lab 485.....	1		
	16		13

Total semester hours required 120

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of free electives.

Concentration 2 is recommended for those students who plan to attend graduate school in biochemistry or who are seeking admission into a program in medicine or dentistry.

¹Math 161 and Math 165 may be used as electives for those student's whose Math ACT score is insufficient for direct entry into Math 200.

²Must be selected from Visual Arts, Music, Theater, or Dance.

³Must be selected from the same language.

⁴Must be selected from Economics, Geography, Anthropology, Political Science, Psychology, or Sociology. One course must be at the 200 level or above.

⁵Concentration electives (7 hrs) must be selected from the following courses: †CHEM 404(1-3), GBIO 200 (3), GBIO 312 (3), MIC 205 and MICL 207 (4), or ZOO 392 (4).

†All Chemistry courses specified above will be used to calculate the major GPA which must be a degree 2.0.

††Chemistry core curriculum course; grade of "C" or better required. This course will also be used to calculate the major GPA which must be a degree 2.0.

CURRICULUM IN CHEMISTRY LEADING TO THE DEGREE OF BACHELOR OF SCIENCE BUSINESS AND INDUSTRY CONCENTRATION

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
††Chemistry 121	3	††Chemistry 122	3
††Chemistry Lab 123	1	††Chemistry Lab 124	1
Library Science 102	1	English 102 or 122H or 124H.....	3
English 101 or 121H or 123H	3	Math 201	5
Math 200 ¹	5	General Biology 151	3
Communications 211	3	Biology Lab 152.....	1
Southeastern 101	2		
	18		16

SECOND YEAR

Physics 221	3	††Chemistry 266	3
Physics Lab 223	1	††Chemistry Lab 268	1
††Chemistry 265	3	Physics 222	3
††Chemistry Lab 267	1	Physics Lab 224	1
English 230, 231, or 232	3	††Chemistry 251	3
Arts Elective ²	3	††Chemistry Lab 254	2
		Computer Science 120 or 161	3
	14		16

THIRD YEAR

†Chemistry 395	3	Economics 201 or 202.....	3
†Chemistry Lab 391	1	Foreign Language ³	3
Foreign Language ³	3	†Chemistry 396	3
Concentration Electives ⁵	6	Concentration Electives ⁵	6
†Chemistry 410	1		
	14		15

FOURTH YEAR

†Chemistry 452.....	3	†Chemistry 401	1
†Chemistry Lab 453.....	2	Electives	12
History Elective.....	3		
Social Sciences ⁴	3		
Concentration Electives ⁵	3		
	14		13
Total semester hours required			120

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of free electives.

Concentration 3 is recommended for those students who are planning for a career in industry. The non-chemistry courses have been chosen such that they provide support for additional work either in a Master's in Business or training in Occupational Safety and Health.

¹Math 161 and Math 165 may be used as electives for those student's whose Math ACT score is insufficient for direct entry into Math 200.

²Must be selected from Visual Arts, Music, Theater, or Dance.

³Must be selected from the same language.

⁴Must be selected from Economics, Geography, Anthropology, Political Science, Psychology, or Sociology. One course must be at the 200 level or above.

⁵Concentration electives (15 hrs) must be selected from any of the following courses:

Industry Courses:

†CHEM 404, OSHE 231[221], OSHE 241[122], OSHE 251[125], OSHE 261[123], OSHE 381[281], OSHE 451

Business Courses:

†CHEM 404, ACCT 200, ECON 201, ECON 202, FIN 381, MGMT 231, MGMT 351, MRKT 303, OMIS 200 [MGMT 261], OMIS 350 [MGMT 290], OMIS 430 [MGMT 474].

†All Chemistry courses specified above will be used to calculate the major GPA which must be a degree 2.0.

††Chemistry core curriculum course; grade of "C" or better required. This course will also be used to calculate the major GPA which must be a degree 2.0.

CURRICULUM IN CHEMISTRY LEADING TO THE DEGREE OF BACHELOR OF SCIENCE POLITICAL SCIENCE/PRE-LAW CONCENTRATION

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
††Chemistry 121	3	††Chemistry 122	3
††Chemistry Lab 123	1	††Chemistry Lab 124	1
Library Science 102	1	English 102 or 122H or 124H.....	3
English 101 or 121H or 123H	3	Math 201	5
Math 200 ¹	5	General Biology 151	3
Communications 211	3	Biology Lab 152.....	1
Southeastern 101	2		
	18		16

SECOND YEAR

††Chemistry 265	3	††Chemistry 251	3
††Chemistry Lab 267	1	††Chemistry Lab 254	2
Physics 221	3	††Chemistry 266	3
Physics Lab 223	1	††Chemistry Lab 268	1
English 230, 231, or 232	3	Physics 222	3
Arts Elective ²	3	Physics Lab 224	1
		Computer Science 120 or 161	3
	14		16

THIRD YEAR

†Chemistry 395	3	†Chemistry 396	3
†Chemistry Lab 391	1	Social Science ⁴	3
†Chemistry 410	1	Foreign Language ³	3
Foreign Language ³	3	Concentration Electives ⁵	3
Concentration Electives ⁵	6		
	14		15

FOURTH YEAR

†Chemistry 452..... 3	†Chemistry 401 1
†Chemistry Lab 453..... 2	Electives 12
Social Science ⁴ 3	
History Elective 3	
Concentration Elective ⁵ 3	
14	13
Total semester hours required 120	

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of free electives.

Concentration 4 is designed for those students who may wish to enter the fields of environmental or patent law. The electives have been chosen from those recommended for pre-law students.

¹Math 161 and Math 165 may be used as electives for those student's whose Math ACT score is insufficient for direct entry into Math 200.

²Must be selected from Visual Arts, Music, Theater, or Dance.

³Must be selected from the same language.

⁴Must be selected from Economics, Geography, Anthropology, Political Science, Psychology, or Sociology. One course must be at the 200 level or above.

⁵Concentration electives (15 hrs) must be selected from the following courses: †CHEM 404(1-3), ECON 201(3), ACCT 200(3), ENGL 321(3), PHIL 313(3), BLAW 232(3), POLI 201(3), or POLI 202(3), POLI 401(3), POLI 406(3), OR POLI 436(3).

†All Chemistry courses specified above will be used to calculate the major GPA which must be a degree 2.0.

††Chemistry core curriculum course; grade of "C" or better required. This course will also be used to calculate the major GPA which must be a degree 2.0.

CURRICULUM IN CHEMISTRY LEADING TO THE DEGREE OF BACHELOR OF SCIENCE FORENSIC SCIENCE CONCENTRATION

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
††Chemistry 121	3	††Chemistry 122	3
††Chemistry Lab 123	1	††Chemistry Lab 124	1
Library Science 102	1	English 102 or 122H or 124H	3
English 101 or 121H or 123H	3	Math 200 ¹	5
General Biology 151	3	General Biology 153	3
Biology Lab 152	1	Biology Lab 154.....	1
Communications 211	3		
Southeastern 101	2		
17		16	

SECOND YEAR

Psychology 101	3	††Chemistry 266	3
Arts Elective ²	3	††Chemistry Lab 268	1
††Chemistry 265	3	Physics 221	3
††Chemistry Lab 267	1	Physics Lab 223	1
Math 201	5	††Chemistry 251	3
		††Chemistry Lab 254	2
		Math 241	3
15		16	

THIRD YEAR

†Chemistry 395	3	†Chemistry 396	3
†Chemistry Lab 391	1	English 230, 231, or 232	3
Physics 222	3	Foreign Language ³	3
Physics Lab 224	1	Computer Science 120 or 161	3
Foreign Language ³	3	Concentration Elective ⁵	3
†Chemistry 410/510.....	1		
Concentration Elective ⁵	3		
15		15	

FOURTH YEAR

†Chemistry 452.....	3	†Chemistry 401	1
†Chemistry Lab 453.....	2	Social Science Elective ⁴	3
†Chemistry 481.....	3	Concentration Electives ⁵	6
†Chemistry Lab 485.....	1	Elective	1
Concentrative Elective ⁵	3	History Elective.....	3
	12		14
Total semester hours required		120	

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of free electives.

Concentration 5 is designed for those students who may wish to enter the fields of forensic science. The electives have been chosen according to the recommendations of the American Academy of Forensic Sciences.

¹Math 165 may be used as electives for those student's whose Math ACT score is insufficient for direct entry into Math 200.

²Must be selected from Visual Arts, Music, Theater, or Dance.

³Must be selected from the same language.

⁴Must be selected from Economics, Anthropology, Political Science, Psychology, or Sociology. One course must be at the 200 level or above.

⁵Concentration electives (15 hrs) must be selected from the following courses: CHEM 105, CJ 101, CJ 201, CJ 207, CJ 302, CJ 353, CJ 412 or SOC 412, GBIO 407, or ZOO 332.

†All Chemistry courses specified above will be used to calculate the major GPA which must be a degree 2.0.

††Chemistry core curriculum course; grade of "C" or better required. This course will also be used to calculate the major GPA which must be a degree 2.0.

HONORS DIPLOMA IN CHEMISTRY

For the Honors Diploma in Chemistry, majors must complete the following requirements:

English 210H or 291H or 292H ¹	3 hours
History 101H, 102H, 201H, or 202H	3 hours
Communications 211H	3 hours
General Biology 151H or 153H.....	3 hours
Honors 191 ²	3 hours
Senior Thesis.....	0 hours
Chemistry 251, 265, 266, 395, 396, 452, 471, 481 ³	9 hours
Chemistry Laboratory 254, 267, 268, 391, 392, 453, 473, 485 ³	3 hours
Chemistry 411	1 hours
Total	27 hours

¹ May be substituted for English 230, 231, or 232.

² Satisfies Art Elective or Art/Music/Theatre/Dance requirement.

³ These courses must be completed as an H-Option

PHYSICS

The notion that all matter from subatomic particles to galactic clusters obeys a small set of principles that can be modeled mathematically is the fundamental premise of physics. The degree program in physics offers comprehensive training in all four major fields of physics: mechanics, electricity and magnetism, thermodynamics, and quantum mechanics. When combined with the numerous opportunities for undergraduate research in physics, the degree program produces students who are well prepared for a career in industry or for graduate study in physics or engineering.

A major in Physics in the College of Science and Technology will be given upon satisfactory completion of 46 semester hours of Physics.

A minor in physics will be granted upon satisfactory completion of 20 semester hours in physics at the 200 level or above, eight hours of which must be Physics 221-223 and Physics 222-224.

PHYSICS PROGRESSION POLICY

Students pursuing the degree of Bachelor of Science in Physics must meet both of the following progression standards:

- a. Students must make successful progress in the following sequence of courses every regular semester: MATH 92; MATH 161; MATH 165; MATH 200; PHYSICS 221/PLAB 223, where the

starting point in the sequence is determined by the “Placement in Mathematics” policy. Students will be permitted to repeat only one of these courses one time.

- b. Students must successfully complete PHYS 221 and PLAB 222 by the end of the 4th regular semesters following the declaration of a major in physics.

Students with exceptional circumstances must have an alternative progression plan approved by the Department Head. Students who do not meet these standards will not be allowed to continue in the physics major.

CURRICULUM IN PHYSICS LEADING TO THE BACHELOR OF SCIENCE DEGREE

FIRST YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
Chemistry 121	3	Chemistry 122	3
Chemistry 123	1	Chemistry 124	1
English 101 or 121H or 123H.....	3	English 102 or 122H or 124H.....	3
Math 200 ¹	5	Math 201	5
Computer Science 161	3	†Physics 221	3
†Physics 130	1	†Physics 223	1
Southeastern 101	2		
	18		16

SECOND YEAR

†Physics 222	3	†Physics 301	3
†Physics 224	1	†Physics 303	1
Computer Science 280	3	†Physics 321	3
Math 312	3	†Physics 351.....	3
English 230, 231, or 232	3	Communication 211	3
History Elective	3		
	16		13

THIRD YEAR

FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
†Physics 332	3	†Physics 402	3
†Physics 312	3	†Physics 425	2
†Physics 314	1	Elective	3
Math 350	3	Biological Science	4
Social Science ²	3	Social Science ²	3
	13		15

FOURTH YEAR

†Physics 331	3	†Physics 422	3
†Physics 421	3	†Physics 401	3
Arts Elective ³	3	†Physics 430	3
Electives	6	Electives	5
	15		14

Total Semester Hours 120

Southeastern 101 is not required of transfer or readmitted Southeastern students with 30 hours or more. Those students will replace Southeastern 101 with 2 hours of electives.

¹Math 161 and Math 165 may be used as electives for those students who must take them before entering Math 200.

²Must be selected from Economics, Geography, Anthropology, Political Science, Psychology, or Sociology. Three (3) credit hours must be at the 200 level or above.

³Must be selected from Visual Arts, Music, Theater, or Dance.

†All courses labeled with this symbol will be used to calculate the major GPA which must be a degree 2.0 average.

HONORS DIPLOMA IN PHYSICS

For the Honors Diploma in Physics, majors must complete the following requirements:

English 210H or 291H or 292H ¹	3 hours
History 101H, 102H, 201H, or 202H	3 hours
Communications 211H	3 hours
General Biology 151H or 153H.....	3 hours
Honors 191 ²	3 hours
Senior Thesis.....	0 hours
Physics 301, 312, 321, 331, 351, 401, 402, 421, 422 ²	9 hours
Physics Laboratory 303, 314, 425 ³	3 hours
Physics 411	1 hours
Total	28 hours

¹ May be substituted for English 230, 231, or 232.

² Satisfies Art Elective or Art/Music/Theatre/Dance requirement.

³ Any one of these courses must be completed as an H-option