

COLLEGE OF SCIENCE & MATHEMATICS

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PROGRAMS OF STUDY IN THE COLLEGE OF SCIENCE AND MATHEMATICS

Department of Biology

Degree Programs

B.S. in Biology
B.S. in Biology with Genetics Emphasis
B.S. in Biology with Medical Technology Emphasis

Department of Physical Sciences

Degree Programs

B.S. in Chemistry
B.S. in Engineering/Chemistry Dual Degree
B.S. in Environmental Science

Department of Mathematics & Computing

Degree Programs

B.S. in Computer Information Systems with Software Development Emphasis
B.S. in Computer Information Systems with Networking Emphasis
B.S. in Computer Engineering/Computer Information Systems Dual Degree
B.S. in Engineering/Mathematics Dual Degree
B.S. in Mathematics
B.S. in Mathematics Secondary Teacher Certification

Department of Nursing

Degree Programs

B.S. in Nursing
B.S. in Nursing (Completion for Registered Nurses)

Department of Biology

The Department of Biology offers the following undergraduate degree programs:

BS in Biology

BS in Biology with an emphasis in genetics

BS in Biology with an emphasis in medical technology

The course requirements for each of these degree programs are on the respective program work sheets (See pages 156-158).

Curricular programs are offered in pre-medicine, pre-veterinary medicine, pre-pharmacy, pre-dentistry, and other pre-professional allied health science fields. Courses in physics, geology, and physical science are offered as support courses for professional, pre-professional, and general education areas of study.

The department also offers an honors program for outstanding biology majors as well as a minor for students majoring in other areas.

BIOLOGY MAJOR

Lander's degree program in biology provides comprehensive training in varied areas within the field of biology. Lander's biology graduates have many career options. They are well prepared for positions in government and industry laboratories, medical and pharmaceutical sales, and emerging biotechnology companies. They compete successfully for entry into graduate and professional schools.

Students graduating from Lander University with a Bachelor of Science in Biology should:

1. Understand the scientific method and be able to use it to investigate questions in field and laboratory biology;
2. Understand the underlying concepts of biology;
3. Know and understand the factual and conceptual foundations of general biology, zoology, botany, genetics, cell biology, molecular biology, and ecology;
4. Have a background in chemistry, mathematics, and statistics sufficient to support a thorough understanding of biological principles;
5. Be able to communicate effectively the results of scientific inquiries;
6. Have a knowledge and understanding of literature, arts, language, and political and social science sufficient to permit rational and meaningful participation in a democratic society; and
7. Have the ability to consider novel ideas critically but without prejudice.

The goal of the biology program is to train biologists and to produce graduates who are prepared for post-baccalaureate pursuits including graduate or professional schools and employment in various biological disciplines. Program graduates will:

1. possess an understanding of a broad spectrum of the accumulated knowledge in the field of biology.
2. possess a working understanding of the application and performance of technologies and laboratory skills in the discipline.
3. be able to successfully enter and compete in graduate or professional school programs, or be able to secure employment in an area of science.
4. possess an understanding of the vocabulary of the discipline and be able to communicate concepts in biology through the proper use of this vocabulary.

The requirements for a Bachelor of Science degree in biology are BIOL 111, 112, 213, 306, 312, 401, 403 and 499 plus 16 hours of approved 300 or 400 level elective biology courses. Biology major electives must be 4 credit hour courses that include both lecture and laboratory components. A biology major must also successfully complete CHEM 111, 112, 221, and 222. Additional course requirements for the emphasis in genetics include BIOL 301, 307, 412, and 498 as well as PHYS 201 and 202. Additional course requirements for the emphasis in medical technology include BIOL 301, 421, 422, 430 and 431. BIOL 301 and PHYS 201-202 or 211-212 are strongly recommended and may be required for students anticipating secondary school teaching or admission to professional or graduate school.

A minimum grade of "C" must be earned in all Biology courses counted toward the degree in Biology. In addition, a minimum cumulative GPA of 2.0 must be earned for all major program requirements (including CHEM 221-222).

It is the student's responsibility to be knowledgeable of the schedule of offerings and to plan carefully so that all requirements for the degree can be fulfilled by the desired graduation date. Biology courses are normally offered according to the following schedule:

Each Fall

BIOL 111
 BIOL 213
 BIOL 311
 BIOL 306
 BIOL 403
 BIOL 415
 BIOL 421
 BIOL 499

Each Spring

BIOL 112
 BIOL 301
 BIOL 307
 BIOL312
 BIOL 312
 BIOL 401
 BIOL 422

Odd Year Springs

BIOL 310

Even Year Springs

BIOL 308

BIولوجY DEGREE WITH AN EMPHASIS IN GENETICS

The genetics emphasis is designed for students interested in careers in genetics or biomedical science. Beginning with the solid foundation in biological sciences provided by the standard Bachelor of Science in biology, this program includes additional coursework and experiences in biochemistry, animal development and genetics. All students in the emphasis will complete a laboratory research project in genetics, the results of which will be presented in a public seminar.

BIولوجY DEGREE WITH AN EMPHASIS IN MEDICAL TECHNOLOGY

Upon completion of a minimum of 93 semester hours of approved courses with a grade point average of at least 3.0, students may enroll in a medical technology internship program at an accredited hospital. Thirty (30) of the ninety-five semester hours must be earned at Lander University. Internship students will train for a period of twelve months under the direction of the hospital instructional staff.

Admission into a medical technology internship program is at the discretion of the instructional staff of the affiliated hospital or institution.

A total of 30 semester hours of coursework completed in an accredited internship program will count toward the Bachelor of Science degree in Biology.

A minimum grade of "C" earned in all courses counted toward the BS degree in Biology with an emphasis in Medical Technology.

Following completion of the internship program, students will be awarded the Bachelor of Science degree in Biology with an emphasis in Medical Technology. Students completing the program will also be eligible to take the national certification examination in Medical Technology. The exam is not a requirement for the degree.

Biology Honors Program

Students majoring in biology will qualify for a B.S. with Honors in Biology if the following requirements are met:

1. Successful completion of the program for biology majors;
2. Cumulative overall grade point average of 3.5 or better;
3. Cumulative grade point average of 3.5 in all biology courses; and
4. Completion of BIOL 301 and PHYS 201-202 or 211-212 with a grade of "C" or better.
5. Completion of a laboratory or field research project in which:
 - (a) The research proposal is approved by a majority of the biology faculty. (*This would normally occur in the fall semester of the junior year.*)

The research is of sufficient quality to justify four semester hours credit (BIOL 410).

- (c) The research results are presented as follows:
 1. by public seminar at Lander University
 2. at a scientific meeting and/or by submission of a paper for publication in an appropriate scientific journal.

Transfer students may graduate with Honors in Biology if they fulfill the above requirements and have a 3.5 GPA overall and in biology from their former institution(s) and complete their last 64 hours, including at least 20 hours of biology, at Lander University

BIOLOGY MINOR

A *minor in biology* includes BIOL 111 plus a minimum of 16 hours of biology courses. Advisors and prospective minors should note that most biology courses have prerequisites and/or corequisites which must be met. A grade of “C” or better is required in all biology courses taken for the minor.

PRE-ALLIED HEALTH SCIENCE CURRICULA

Lander University offers curricular programs in the following areas: Pre-Medicine, Pre-Dentistry, Pre-Optometry, Pre-Veterinary Medicine, Pre-Pharmacy, Pre-Physical Therapy, and Pre-Occupational Therapy. Students fulfilling the requirements of these programs most often major in Biology or Chemistry.

*Application to veterinary and optometry schools can be made after accumulating 90 semester hours of undergraduate courses.

Although most professional schools have common core curriculum requirements, there are variances. In addition, some schools have regular admission programs, early decision programs, and early admission programs. In the early admission program, the student can be accepted as early as the third semester of undergraduate study. There are variations in the number of hours and courses required by similar programs offered at different institutions. To better serve Lander’s students, each program has a designated faculty advisor. As soon as the decision to enter one of the health-related programs is made, the student and his/her advisement records should be turned over to the appropriate health program advisor in the department.

Department of Biology or the Department of Physical Sciences.

Because of the variation in programs, it is imperative that students work closely with the advisor. The student needs to choose the school of transfer early, with MUSC and USC being the logical choice for South Carolina residents. The Medical College of Georgia no longer accepts out-of-state students into Physical and Occupational Therapy, and few slots are reserved for such students by schools that do. Students must recognize the very competitive nature of these programs and are therefore strongly encouraged to choose a major as a back-up plan. To have a reasonable chance of being accepted, students applying to Physical Therapy or Occupational Therapy programs will need both a science GPA and an overall GPA of 3.0 or higher. GRE scores are also required for admission into either program.

Students applying to MUSC or USC for Physical Therapy and Occupational Therapy **MUST** have a Bachelor of Science degree at the time they matriculate at MUSC or USC. Applications for both programs are made in the fall. For early admission into both programs applications **MUST** be received by November 1. For regular admission, applications **MUST** be received by January 15.

Lander’s pre-medical program has two objectives: To prepare students to score well on the MCAT and to make the student very competitive once admitted to a school of medicine. The program consists of the following courses.

| Courses | Hrs. |
|---------------------------------|-------------|
| BIOL 111 and 112 | 8 |
| CHEM 111 and 112 | 8 |
| MATH 121 or 131 and 211 | 6 |
| ENGL 101 and 102 | 6 |
| BIOL 312 | 4 |
| CHEM 221 and 222 | 8 |
| BIOL 421 and 311 | 8 |
| BIOL 307 and 308 | 8 |
| BIOL 301 or CHEM 301 | 3 |
| PHYS 201 and 202 or 211 and 212 | 8 |
| BIOL 401, 403, and 422 | 12 |

Students in Lander's pre-dental program and preveterinary programs will take all of the courses that are in the pre-medical program except for BIOL 307.

Requirements for the Pre-Physical Therapy program:

| Courses | Hrs. | |
|------------------------------|-------------|------|
| ENGL 101, 102 | 6 | |
| MATH 121 or 131, 211 | 6 | |
| CHEM 111-112 | 8 | |
| BIOL 111-112 | 8 | |
| BIOL 202, 203, and 307 | 12 | |
| PHYS 201, 202 | 8 | |
| PSYC 101, 251, 314 | 9 | |
| Medical Terminology | 1 | |
| Humanities | 9 | |
| Computer Information Systems | 3 | |
| CPR Certification | | N/A* |
| Volunteer Work | | N/A* |

Requirements for the Pre-Occupational Therapy Program:

| Courses | Hrs. | |
|------------------------------|-------------|------|
| ENGL 101, 102 | 6 | |
| MATH 121 or 131, 211 | 6 | |
| CHEM 111, 112 | 8 | |
| BIOL 111, 112 | 8 | |
| BIOL 202 and 203 | 8 | |
| PHYS 201 | 4 | |
| PSYC 101, 203, 251 | 9 | |
| SOCI 101 | 3 | |
| Humanities | 9 | |
| Computer Information Systems | 3 | |
| CPR Certification | | N/A* |
| Volunteer Work | | N/A* |

* N/A = Not Applicable

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE

MAJOR: BIOLOGY

| Course | Credit Hour |
|--|--------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM 111) | 4 |
| Laboratory Science (CHEM 112) | 4 |
| Logic & Analytical Thought (MATH 211) | 3 |
| Mathematics (MATH 121 OR 131) | 3 |
| Political Economy | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |
| CORE REQUIREMENTS | |
| BIOL 111 | 4 |
| BIOL 112 | 4 |
| BIOL 213 | 4 |
| BIOL 306 | 4 |
| BIOL 312 | 4 |
| BIOL 401 | 4 |
| BIOL 403 | 4 |
| BIOL 499 | 1 |
| CHEM 221 | 4 |
| CHEM 222 | 4 |
| MAJOR ELECTIVES* | |
| Biology 300 or Above | 16 |
| ELECTIVES | 17-23 |
| TOTAL FOR BS DEGREE | 121 |

*Biology major electives must be 4 credit hour courses that include both lecture and laboratory components.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE

MAJOR: BIOLOGY

EMPHASIS: GENETICS

Course Credit Hour

GENERAL EDUCATION REQUIREMENTS (*For approved courses see the General Education section.*)

| | |
|---------------------------------------|-----|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM 111) | 4 |
| Laboratory Science (CHEM 112) | 4 |
| Logic & Analytical Thought (MATH 211) | 3 |
| Mathematics (MATH 121 OR 131) | 3 |
| Political Economy | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|----------|---|
| BIOL 111 | 4 |
| BIOL 112 | 4 |
| BIOL 213 | 4 |
| BIOL 306 | 4 |
| BIOL 312 | 4 |
| BIOL 401 | 4 |
| BIOL 403 | 4 |
| BIOL 499 | 1 |
| CHEM 221 | 4 |
| CHEM 222 | 4 |

MAJOR ELECTIVES*

| | |
|----------------------|---|
| Biology 300 or Above | 8 |
|----------------------|---|

EMPHASIS REQUIREMENTS

| | |
|----------|---|
| BIOL 301 | 3 |
| BIOL 307 | 4 |
| BIOL 412 | 4 |
| BIOL 498 | 1 |

ADDITIONAL REQUIREMENTS

| | |
|-----------------|---|
| PHYS 201 OR 211 | 4 |
| PHYS 202 OR 212 | 4 |

ELECTIVES 5-11

TOTAL FOR BS DEGREE 121

*Biology major electives must be 4 credit hour courses that include both lecture and laboratory components.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: BIOLOGY
EMPHASIS: MEDICAL TECHNOLOGY

| Course | Credit Hour |
|--|----------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | 0-6 |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM 111) | 4 |
| Laboratory Science (CHEM 112) | 4 |
| Logic & Analytical Thought (MATH 211) | 3 |
| Mathematics (MATH 121 OR 131) | 3 |
| Political Economy | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |
| CORE REQUIREMENTS | |
| BIOL 111 | 4 |
| BIOL 112 | 4 |
| BIOL 213 | 4 |
| BIOL 306 | 4 |
| BIOL 312 | 4 |
| BIOL 401 | 4 |
| BIOL 403 | 4 |
| BIOL 499 | 1 |
| CHEM 221 | 4 |
| CHEM 222 | 4 |
| EMPHASIS REQUIREMENTS | |
| BIOL 301 | 3 |
| BIOL 421 | 4 |
| BIOL 422 | 4 |
| ADDITIONAL REQUIREMENTS | |
| (clinical experience at a participating accredited hospital) | |
| BIOL 430 | 15** |
| BIOL 431 | 15** |
| TOTAL FOR BS DEGREE | 123-129 |

*The Professional Concerns requirement is an integral component of the senior year internship program.

**Internship

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

Department of Physical Sciences

The Department of Physical Sciences offers the following undergraduate degree programs:

BS in Chemistry

BS in Chemistry-Chemical Engineering (offered as a dual degree program with Clemson University)

BS in Environmental Science

The course requirements for each of these degree programs are on the respective program worksheets on the following pages.

The Department's Web page (www.lander.edu/science) contains information about the individual programs of study, scholarships available for students majoring in Chemistry, Engineering/Chemistry Dual Degree, or Environmental Science, a link to an on-line application for these scholarships, and links to the home pages of faculty members.

An honors program is available in chemistry. Minors are available in chemistry and environmental science.

Curricular programs are also offered in pre-medicine, pre-pharmacy, pre-dentistry, and other pre-professional allied health science fields.

Courses in physics, geology, and physical science are offered as support courses for professional, pre-professional, and general education areas of study.

CHEMISTRY MAJOR

Chemistry is an experimental science that has as its goal the development of an atomic and molecular interpretation of the properties and behavior of matter. The fundamental nature and extensive application of chemistry to other fields of science gives the chemistry graduate a variety of career choices and advanced study opportunities. Among these are industrial chemistry, government service, sales or supervision, secondary school teaching and entry into graduate or professional schools. A program of maximum flexibility can best serve this wide variety of potential interests.

The student will have competency in the following areas prior to graduating from Lander University with a degree in Chemistry:

1. Chemistry: Fundamental principles of analytical, inorganic, organic, and physical chemistry;
2. Mathematics: Fundamental principles of differential, integral, and multivariable calculus; and
3. Physics: Fundamental principles of mechanics, heat, electricity, magnetism and waves.

Goals for the program are that all students majoring in chemistry will:

1. have been conveyed a body of knowledge and provided experiences with the tools and techniques used by a chemist, including the use of modern technology and instrumentation, and communication skills appropriate to the discipline.
2. be able to successfully enter and perform in either graduate school or the job market.
3. have been effectively advised.
4. have been offered a variety of courses exposing students to all areas of chemistry.
5. have been provided a safe environment for the instruction and learning of chemistry.

The core requirements for a Bachelor of Science degree in chemistry are CHEM 111-112, 221-222, 330, 331, 401-402, plus a minimum of seven hours of elective courses from the following: CHEM 301, 311, 351, 390, 407-410, or 420. Required cognates include BIOL 111, MATH 131-132, PHYS 201-202 or 211-212 and a minimum of six hours of electives from the following: BIOL 112 or higher, CHEM 300 or higher, CIS 101 or higher, MATH 211 or higher, PHYS 203 or 213, ES 300 or higher, or GEOL 111 or higher. The program features extensive student participation in experimental laboratory work. In many instances, experiments are chosen to coincide with a student's specific needs and interests.

Chemistry courses are normally offered according to the following schedule:

Every Fall

CHEM 111
CHEM 221
CHEM 330
CHEM 401
CHEM 411

Every Spring

CHEM 112
CHEM 222
CHEM 301
CHEM 331
CHEM 351
CHEM 402
CHEM 420

Even Year Fall

CHEM 311

Other specialized courses may be offered as needed.

Odd Year Spring

CHEM 341

Chemistry Honors Program

A student graduating from Lander University with the Bachelor of Science degree in chemistry may qualify for the “Honors Degree in Chemistry” if the following conditions have been met:

1. Upon graduation, the student must have a GPA of 3.5 in both overall course work and chemistry with no D’s in any chemistry courses.
2. In addition to the normal course requirements, the following courses must be taken:

| | |
|------------------------|-------------------|
| Multivariable Calculus | MATH 232 |
| Chemistry Elective | CHEM 300 or above |
| Computer Info. Systems | CIS 130 |
3. The student must complete a research project in which:
 - (a) The research is of sufficient quality to receive four semester hours credit in CHEM 410,
 - (b) The results are submitted for publication in a scientific journal or presentation at a scientific meeting (such as the South Carolina Academy of Science), and
 - (c) The results are presented in seminar format to the science faculty, students, and invited guests.

The project may be completed entirely at Lander or initiated off campus during a summer research program (for example, programs at Argonne, Brookhaven, and Oak Ridge National Laboratories).

Transfer students entering this program must have a 3.5 GPA overall and in chemistry from their former institution(s) and must meet the above guidelines.

ENGINEERING/CHEMISTRY DUAL DEGREE

Students who wish to combine study in chemistry with further study in chemical engineering may do so under the Clemson University-Lander University Engineering Dual Degree Program. Under this cooperative agreement students will spend the first three years of their college career at Lander University in a chemistry program of study and the remaining two years at Clemson University in chemical engineering.

A student who completes this five-year program of study will have had the experience of dividing his or her academic career between the liberal arts environment of a small university campus and the engineering climate of a large technically oriented university. This unique combination of study on two differently oriented campuses will provide a student with excellent engineering and chemistry training, complemented by study in the humanities and social sciences. Thus, a graduate from this dual degree program will be well trained to pursue a technical career strongly oriented to problems relevant to today’s society.

Students apply to Clemson for admission in their third academic year at Lander. They must be recommended by the Lander faculty. Those students who do not maintain a GPA which would be competitive for entrance to Clemson may not be recommended. A grade of “C” or better is required in all courses transferred to Clemson.

Acceptance into the Clemson engineering program is at the discretion of Clemson University. Clemson recommends that the prospective student attend summer school at Clemson following the sophomore or junior year at Lander.

All dual degree engineering majors will be able to enter Clemson University at a level competitive with students already at that university.

The student will have competency in the following areas prior to leaving for Clemson University:

1. Chemistry: Fundamental principles of analytical, inorganic, organic, and physical chemistry.
2. Mathematics: Differential, integral, and multivariable calculus, and differential equations.
3. Physics: Mechanics, fluids, heat, electricity, magnetism, atomic and nuclear physics.
4. Engineering: Engineering problem analysis, material and mass balances on chemical process

systems, and engineering case studies.

5. Calculator: Proficiency in the use of an advanced scientific calculator.

ENVIRONMENTAL SCIENCE MAJOR

Public and legislative concern for environmental quality and its protection has created a growing demand for college graduates trained in environmental science. The Environmental Science major at Lander University is an interdisciplinary program drawing on courses in biology, chemistry, geology, environmental science, physics, mathematics, computer information systems, political science, and economics designed to meet this demand. Graduates are qualified for careers with industry, governmental service, and environmental consulting firms as well as entry into graduate or professional schools.

The core requirements for a Bachelor of Science degree in Environmental Science are BIOL 111, 306, and 421, CHEM 111, 112, 221, 330, and 331, CIS 101, ES 300, 301, 302, 310, 415, and 420, and GEOL 111 and 405.

It is the student's responsibility to be aware of the schedule of course offerings and to plan carefully so that all requirements for the degree can be completed in the desired time. Major courses are normally offered according to the following schedule.

Every Fall Semester

BIOL 111
BIOL 306
BIOL 421
CHEM 111
CHEM 221
CHEM 330
ES 415

Every Spring Semester

CHEM 112
CHEM 331
ES 300
ES 420
ES 499
GEOL 111

Even Year Fall

ES 301

Odd Year Spring

ES 302

Odd Year Fall

ES 310

Even Year Spring

GEOL 405

Students graduating from Lander University with a Bachelor of Science in Environmental Science should:

1. Understand the scientific method and be able to use it to formulate questions and design experiments to answer them;
2. Understand the underlying concepts and accumulated knowledge of the field of environmental science;
3. Understand and be capable of applying field and laboratory methodology and technology to assess environmental conditions;
4. Know and understand the factual and conceptual foundations of biology, chemistry, physics, geology, mathematics, and ecology as they apply to environmental science;
5. Be able to communicate effectively the results of scientific inquiries;
6. Have knowledge and understanding of literature, arts, language, economics, and the political and social sciences sufficient to permit rational and meaningful participation in a democratic society;
7. Have the ability to consider novel ideas critically and without bias;
8. Be able to use mathematics, statistics, and computer technology to capture, analyze, graph, and manage data; and
9. Understand the legal, ethical, social, political, and economic ramifications of environmental problems, policy, and decisions.

The goal of the Environmental Science program is to train Environmental Scientists and to produce graduates who are prepared for post-baccalaureate pursuits including graduate or professional schools and employment in the discipline. Program graduates will:

1. possess an understanding of a broad spectrum of the accumulated knowledge and methodology in the discipline.
2. be able to enter and compete in graduate or professional school programs, or be able to secure employment in the discipline.
3. possess an understanding of the vocabulary of the discipline and be able to communicate concepts through the proper use of this vocabulary.

CHEMISTRY MINOR

A minor in chemistry consists of 24 hours of the following: CHEM 111-112 and 16 hours from 200 level courses or above. A GPA of 2.0 or better is required for courses applied to the chemistry minor.

ENVIRONMENTAL SCIENCE MINOR

A minor in environmental science consists of 22 hours comprising BIOL 111, BIOL 306, CHEM 111, GEOL 111, ES 301, and ES 302.

PRE-ALLIED HEALTH SCIENCE CURRICULA

The Department of Physical Sciences offers curricular programs in the following areas: Pre-Medicine, Pre-Dentistry, and Pre-Pharmacy. Students fulfilling the requirements of these programs major in Chemistry.

All pharmacy degree programs in the State of South Carolina are now 6-year Pharm. D. programs. As such, they require students to have a minimum of 67 semester hours before applying to pharmacy school.

Although most professional schools have common core curriculum requirements, there are variances. In addition, some schools have regular admission programs, early decision programs, and early admission programs. In the early admission program, the student can be accepted as early as the third semester of undergraduate study. There are variations in the number of hours and courses required by similar programs offered at different institutions. To better serve Lander's students, each program has a designated faculty advisor. As soon as the decision to enter one of the health-related programs is made, the student and his/her advisement records will be turned over to the appropriate health program advisor in the Department of Physical Sciences.

Successful completion of the following Lander courses will allow a student to apply to pharmacy programs at both the Medical University of South Carolina and the University of South Carolina:

| Courses | Hours |
|--|--------------|
| CHEM 111-112 | 8 |
| BIOL 111-112 | 8 |
| MATH 111 OR 112 AND 131 OR MATH 121 AND 123 | 6 |
| ENGL 101-102 | 6 |
| MATH 211 | 3 |
| CHEM 221-222 | 8 |
| ECON 201 OR 202 | 3 |
| PHYS 201-202 OR 211-212 | 8 |
| SPCH 101 | 3 |
| BIOL 202 | 4 |
| BIOL 203 or 311 | 4 |
| BIOL 421 | 4 |
| HISTORY | 3 |
| FINE ARTS | 3 |
| PSYC | 3 |
| ELECTIVES (must be in social sciences) | 9 |

Successful completion of the following Lander courses will prepare students to score well on the MCAT and will make the students very competitive once admitted to a school of medicine. The prerequisites for medical school include:

| Courses | Hours |
|-------------------------|--------------|
| CHEM 111-112 | 8 |
| BIOL 111-112 | 8 |
| MATH 131-132 | 6 |
| CHEM 221-222 | 8 |
| PHYS 201-202 OR 211-212 | 8 |
| ENGL 101-102 | 6 |

Other science courses are recommended in order to better prepare the student.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: CHEMISTRY

| Course | Credit Hour |
|---|-------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (PHYS 201 OR 211) ¹ | 4 |
| Laboratory Science (PHYS 202 OR 212) ¹ | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| | |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |
| | |
| CORE REQUIREMENTS | |
| | |
| CHEM 111 | 4 |
| CHEM 112 | 4 |
| CHEM 221 | 4 |
| CHEM 222 | 4 |
| CHEM 330 | 5 |
| CHEM 331 | 5 |
| CHEM 401 | 4 |
| CHEM 402 | 4 |
| CHEM 499 | 1 |
| | |
| ADDITIONAL REQUIREMENTS | |
| | |
| BIOL 111 | 4 |
| CHEM 300 or above | 4 |
| CHEM 300 or above (except CHEM 381) | 3-4 |
| CHEM 341 | 4 |

MAJOR ELECTIVES

Choose two of the following:

- BIOL 112 or higher
- CHEM 300 or higher
- CIS 101 or higher
- MATH 211 or higher
- PHYS 203 or 213
- ES 300 or higher
- GEOL 111 or higher

6-8

ELECTIVES

15-24

TOTAL FOR BS DEGREE

125

¹Students who plan to attend graduate school should take PHYS 211-212.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE

MAJOR: CHEMISTRY

PROGRAM: DUAL ENGINEERING

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|-----|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies (ECON 321) | 3 |
| History (101, 102, 111, OR 112) | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (PHYS 211) | 4 |
| Laboratory Science (PHYS 212) | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy (ECON 201) | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|----------|---|
| CHEM 111 | 4 |
| CHEM 112 | 4 |
| CHEM 221 | 4 |
| CHEM 222 | 4 |
| CHEM 330 | 5 |
| CHEM 331 | 5 |
| CHEM 401 | 4 |
| CHEM 402 | 4 |
| CHEM 499 | 1 |

ADDITIONAL REQUIREMENTS

| | |
|----------|---|
| MATH 133 | 1 |
| MATH 231 | 3 |
| MATH 232 | 3 |
| MATH 240 | 4 |
| CHEM 351 | 4 |
| PHYS 314 | 4 |

SENIOR YEAR: STUDENT TRANSFERS TO CLEMSON UNIVERSITY.

In completing the Chemical Engineering degree at Clemson, 11 semester hours of engineering courses will count toward the major requirements and 9-15 semester hours will apply toward the general requirements for a B.S. in Chemistry from Lander. Students must complete the Clemson degree requirements for a B.S. in Chemical Engineering to obtain the B.S. degree from Lander. This option is available ONLY to students who pursue a degree in CHEMICAL engineering at Clemson.

TOTAL FOR BS DEGREE

125

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: ENVIRONMENTAL SCIENCE

| Course | Credit Hour |
|---|--------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/Nonwestern Studies (ECON 321 OR CHEM 381) | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (PHYS 201 OR 211) | 4 |
| Laboratory Science (PHYS 202 OR 212) | 4 |
| Logic & Analytical Thought (MATH 121 OR 131*) | 3 |
| Mathematics (MATH 211) | 3 |
| Political Economy | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |
| CORE REQUIREMENTS | |
| BIOL 111 | 4 |
| BIOL 306 | 4 |
| BIOL 421 | 4 |
| CHEM 111 | 4 |
| CHEM 112 | 4 |
| CHEM 221 | 4 |
| CHEM 330 | 5 |
| CHEM 331 | 5 |
| CIS 101 | 3 |
| ES 300 | 4 |
| ES 301 | 3 |
| ES 302 | 3 |
| ES 310 | 3 |
| ES 415 | 4 |
| ES 420 | 4 |
| ES 499 | 1 |
| GEOL 111 | 4 |
| GEOL 405 | 3 |
| ELECTIVES | 8-14 |
| TOTAL FOR BS DEGREE | 125 |

*Students anticipating graduate studies in Environmental Science are strongly encouraged to choose MATH 131.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

DEPARTMENT OF MATHEMATICS & COMPUTING

The Department of Mathematics and Computing provides students with opportunities to earn bachelor of science degrees in computer information systems or in mathematics. Honors programs and minors are also offered in both disciplines. A degree in engineering is available through Lander University's dual-degree program with Clemson University. Students who complete this five-year dual-degree program receive a bachelor's degree in Engineering from Clemson University and a bachelor's degree in either computer information systems or mathematics from Lander University.

The Department's Web page (www.lander.edu/mathcis) contains information about the individual programs of study, scholarships available for students majoring in computer information systems or mathematics, a link to an on-line application for these scholarships, and links to the home pages of faculty members.

COMPUTER INFORMATION SYSTEMS MAJOR

Computer information systems are prominent in the modern world. The Computer Information Systems (CIS) major allows students to develop the knowledge and skills required to understand these systems and participate in their creation and maintenance.

The Computer Information Systems major at Lander has three components: core courses, an emphasis within CIS, and a minor outside CIS. The core requirements form the basis of the program by providing the fundamentals necessary for advanced study. The emphasis allows a student to develop a specialization within computer information systems. The minor provides a domain where CIS can be put into practice.

The CIS core includes courses in problem solving and programming skills (CIS 130, 230, 231), productivity tools, (CIS 102), information management (CIS 120, 320), data communications (CIS 240), computer organization (CIS 235), information analysis and design (CIS 321), and database design (CIS 360). It also includes the senior level capstone experience (CIS 499).

Students can choose an emphasis in software development, in networking, or in computer engineering. The software development emphasis requires advanced courses in software development. The networking emphasis covers data communications and computer networking in depth.

The computer engineering emphasis is part of Lander's dual-degree program with Clemson University. Students in the computer information systems/computer engineering dual-degree program must complete specific mathematics and science courses at Lander in order to meet the program requirements of Clemson University. Students completing this program will be awarded both a B.S. in computer information systems from Lander University with a minor in mathematics, and a B.S. in computer engineering from Clemson University.

The computer information systems major requires that each student complete a minor; this minor will provide competency in a secondary area where CIS can be applied. Students may choose from a number of minors, as indicated in the table below. Other minors (or a second major) offered across campus are eligible for consideration as well. The mathematics minor is suggested for students interested in pursuing graduate studies, and is required for students in the computer engineering emphasis.

| Minor | Software Development | Networking | Dual Degree |
|------------------------|----------------------|------------|-------------|
| Business | √ | √ | |
| Health Care Management | √ | | |
| Mathematics | √ | √ | √ |
| Public Administration | √ | | |
| Electronic Art | √ | | |

In order to complete a computer information system degree program in a timely fashion, students should complete the problem solving and programming skills sequence (CIS 130, 230, 231), along with CIS 102 and CIS 120, by the end of their third or fourth semester.

A grade of "C" or better is required in all computer information systems courses applied to the major, with the following exception: a grade of "D" will be allowed in at most one CIS course at the 300- or 400-level. Courses in oral and/or written communication skills (SPCH 101 and ENGL 275) are strongly encouraged.

All students pursuing a degree in computer information systems are required to have an exit interview with the computer information systems faculty during their final year at Lander University. They will also participate in program assessment activities.

The program requirements for the CIS major and the dual-degree program are articulated on the individual program worksheets. A successful graduate in the computer information systems major will have competency in the following areas:

Information System Principles. This includes systems theory and concepts, information systems in organizations, decision support systems, and evaluation of systems performance.

Programming Principles. This includes problem solving, algorithm development, and application programming using structured and object-oriented approaches that stress abstraction, programming style, two or more high-level languages, and various software development environments.

Data Organization and Management. This includes data and file structures, access methods, algorithm design and analysis, and relational database organization and design.

Computer Organization. This includes logical organization of computers, levels of abstraction, machine and assembly languages, data representation and addressing, and memory management.

Data Communications and Networking. This includes networking and telecommunications concepts and standards, distributed computing, networked information technologies, protocols, and e-commerce.

System Development Methodology. This includes requirements specifications, analysis, design, implementation, and testing. Also included are software tools, system prototyping, robustness of systems, documentation, efficiency, ethics, human-computer interaction, and software development in a team environment.

Information Systems Applications. Each student will have demonstrated competency in an approved application area, through completion of a minor or second major in that area.

Computer Information Systems Honors Program

Students majoring in computer information systems may earn a “B.S. Degree with Honors” in computer information systems. To qualify, a student must:

1. Complete the following courses:
MATH 131, MATH 132, MATH 325, CIS 330, CIS 498, and any two of CIS 340, CIS 341, or CIS 440.
2. Complete six semester hours of a foreign language. This foreign language may not be English or the student’s native language.
3. Submit a research proposal by January 15 of the junior year. The proposal must be approved by a majority of the computer information systems faculty and result in a finished product of sufficient quality to:
 - (a) Receive three semester hours credit (CIS 390), and
 - (b) Be accepted for publication or presented at a meeting of a computing society such as the Association for Computing Machinery; or be presented as a seminar to faculty, students, and guests.
4. Graduate with a B.S. degree in computer information systems with a grade point average of 3.5 in both overall course work and in computer information systems course work.

ENGINEERING DUAL-DEGREE PROGRAM

Students who wish to combine study in a liberal arts program with further study in an engineering discipline may do so under the Lander University-Clemson University Engineering Dual-Degree Program. Under this cooperative agreement, students spend the first three years of their college career at Lander University and then two years at Clemson University in the engineering discipline of their choice.

Students who complete this five-year program of study will have the experience of dividing their academic career between the liberal arts environment of a small university campus and the engineering climate of a large, technically-oriented university. This unique combination of study on two differently oriented campuses provides students with excellent engineering training strongly complemented by study in the humanities and social sciences.

This program can be applied to the following engineering disciplines at Clemson: biosystems and materials,, ceramic, chemical, civil, computer, electrical, industrial, and mechanical. Chemical engineering is available only through a program in which the student majors in chemistry at Lander (see page 160). Computer engineering may be combined with either a mathematics or a computer information systems major at Lander. All other engineering disciplines are coupled with a mathematics major at Lander.

Students apply for admission to Clemson during their third academic year at Lander University. Acceptance into the Clemson engineering program is at the discretion of that university. Clemson recommends that prospective students take a class *at Clemson* during the summer school session following their sophomore or junior year at Lander.

A grade of “C” or better is required in all courses applied to the dual-degree program and in all courses which must transfer to Clemson University.

Dual-degree engineering majors enter Clemson University at a level competitive with students already at that university. Successful completion of the program will result in the student being awarded a Bachelor of Science degree in Engineering from Clemson University and a Bachelor of Science degree in their major from Lander University.

Students will have competency in the following areas prior to leaving for Clemson University:

A. ENGINEERING/COMPUTER INFORMATION SYSTEMS DUAL DEGREE

Information System Principles. This includes systems theory and concepts, information systems in organizations, decision support systems, and evaluation of systems performance.

Programming Principles. This includes problem solving, algorithm development, and application programming using structured and object-oriented approaches that stress abstraction, programming style, two or more high-level languages, and various software development environments.

Data Organization and Management. This includes data and file structures, access methods, algorithm design and analysis, and relational database organization and design.

Computer Organization. This includes logical organization of computers, levels of abstraction, machine and assembly languages, data representation and addressing, and memory management.

Data Communications and Networking. Includes networking and telecommunications concepts and standards, distributed computing, networked information technologies, protocols, and electronic commerce.

System Development Methodology. This includes requirements specifications, analysis, design, implementation, and testing. Also included are software tools, system prototyping, robustness of systems, documentation, efficiency, ethics, human-computer interaction, and software development in a team environment.

B. ENGINEERING/MATHEMATICS DUAL DEGREE

The Foundations of Mathematics. This includes first and foremost a firm grounding in the major concepts of mathematics needed for continued learning in the field of engineering. Students must learn to analyze a given situation, extract the pertinent facts, and then draw correct conclusions. Specifically included are basic algebraic operations, the elements of set theory, and the fundamentals of logic.

Advanced Algebra This includes knowledge of the basic constructs of linear algebra.

Analysis. This includes both calculus and differential equations. Students must have knowledge of continuity, differentiation, integration, sequences and series, and multivariable calculus. Students must be able to solve the basic differential equations that arise in engineering applications.

Probability and Statistics. This includes the acquisition and analysis of data, probability, discrete and continuous probability distributions, estimation using confidence intervals, testing of hypotheses, and linear regression.

MATHEMATICS MAJOR

Mathematics is fundamental to both the theoretical and the practical problem-solving components of virtually every field of study. The purpose of the mathematics major at Lander University is to provide students with the opportunity and the direction to enjoy the intellectual challenges of mathematics, and also to provide them with the mathematical knowledge necessary to function competently in graduate school and/or in employment requiring mathematical skills.

A successful graduate with a mathematics major will have specific competency in:

1. *The Foundations of Mathematics.* This includes first and foremost a firm grounding in the major concepts and applications of mathematics needed for successful continued learning in the field. Students must learn to analyze a given situation, extract the pertinent facts, and then draw correct conclusions. Specifically included are basic algebraic operations, the elements of set theory, and the fundamentals of logic.
2. *Advanced Algebra.* This includes the fields of linear and abstract algebra. Specifically, the student must know the basic concepts and applications in these fields, including a basic understanding of groups, rings, fields, and vector spaces.
3. *Analysis.* This includes calculus and at least one of the fields of real or complex analysis. Students must know the basic concepts and applications of continuity, differentiation, integration, sequences and series, and multivariable calculus. Additionally, all students will be able to solve the basic differential equations that arise in common applications.
4. *Probability and Statistics.* Students must know the basic concepts and applications of acquisition and analysis of data, probability, discrete and continuous probability distributions, estimation using confidence intervals, testing of hypotheses, and linear regression.

The requirements for a degree in mathematics are as follows: twelve hours of calculus (MATH 131-132, 231-232), differential equations (MATH 240), linear algebra (MATH 308), discrete mathematics (MATH 325), probability and statistics (MATH 311), modern algebra (MATH 321), real analysis (MATH 431), the capstone course (MATH 400), calculus-based physics (PHYS 211-212), and two courses in computer information systems (CIS 130 and one of CIS 102, 202, or CIS 230).

A minimum of 39 semester hours in mathematics courses is required and must consist of the core courses listed above, completion of either the modern algebra or analysis sequence (MATH 322 or MATH 432), plus at least nine hours selected from MATH 204, MATH 212, or any content electives at the 300 level or above. Students obtaining secondary teacher certification are required to take courses in math history, geometry, and teaching methods (MATH 350, MATH 351, and MATH 451, respectively).

A grade of 'C' or better is required in all mathematics courses applied to the major.

During their final year at Lander University, all students seeking a degree in mathematics are required to take an assessment exam in mathematics and to have an exit interview with the mathematics faculty.

The following mathematics courses will be offered as indicated.

Every Fall
MATH 125
MATH 231
MATH 308

Every Spring
MATH 232
MATH 240

Even Year Fall
MATH 300
MATH 351
MATH 431

Odd Year Spring
MATH 325
MATH 350
MATH 432

Odd Year Fall
MATH 204
MATH 311
MATH 321

Even Year Spring
MATH 322
MATH 412

Mathematics Honors Program

Students majoring in mathematics may earn a “B.S. Degree with Honors” in mathematics. To qualify, a student must meet the following conditions:

1. In addition to the normal course requirements for a B. S. degree in mathematics, the student must complete the following courses:
MATH 322, MATH 351, MATH 412, and two computer information systems courses chosen from:
CIS 231, CIS 235, CIS 330, and CIS 340.
2. The student must complete six semester hours of a college level language. This language may not be English or the student’s native language.
3. The student must submit a project proposal no later than January 15 of the junior year. The proposal must be approved by a majority of the full-time mathematics faculty and result in a finished product of sufficient quality to:
 - (a) Receive a grade of “A” or “B” (MATH 499) and
 - (b) Be accepted for publication or presented at a meeting of a mathematical society; or be presented as a seminar to mathematics faculty, students, and guests.
4. Upon graduation, the student must have a cumulative GPA of 3.5 or better in both overall course work and in mathematics course work.

NOTE: In lieu of requirement 2 above, the student may complete an engineering degree at Clemson University under the engineering/mathematics dual-degree program. The student may then substitute an approved engineering project at Clemson for requirement 4 above.

Special situations may require a deviation from these requirements (such as for students seeking teacher certification in mathematics or those in the engineering program). All deviations must be approved by a majority of the mathematics faculty.

Transfer students who wish to pursue an Honors Program in Mathematics must spend at least four full-time semesters (fall or spring) at Lander University and complete at least 21 semester hours of mathematics courses at Lander University. They must also have an overall GPA of 3.5 on all courses transferred and a GPA of 3.5 on mathematics courses transferred.

MINORS OFFERED

Computer Information Systems Minor

A minor in computer information systems consists of

- CIS 102, CIS 120, CIS 130, CIS 230, CIS 231, CIS 321,
- one of the following courses: MATH 125, MATH 204, MATH 212, MATH 308, MATH 311, MATH 325, or BA325.

A grade of “C” or better is required in each course applied to the computer information systems minor.

Mathematics Minor

A minor in mathematics consists of

- the calculus sequence (MATH 131-132, MATH 231-232),
- probability and statistics (MATH 311 or 211-212 which counts as three hours toward minor requirements),
- CIS 130 or above,
- one course from the following: MATH 204, 240, or any three hour 300 or 400 level mathematics content course.

A grade of ‘C’ or better is required in each course applied to the mathematics minor.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: COMPUTER INFORMATION SYSTEMS
EMPHASIS: SOFTWARE DEVELOPMENT

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|-----|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts * | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science | 4 |
| Laboratory Science | 4 |
| Logic & Analytical Thought (MATH 121 or 131) | 3 |
| Mathematics (MATH 125 or 132) | 3 |
| Political Economy* | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|---------|---|
| CIS 120 | 3 |
| CIS 130 | 4 |
| CIS 230 | 4 |
| CIS 231 | 4 |
| CIS 235 | 3 |
| CIS 240 | 3 |
| CIS 320 | 3 |
| CIS 321 | 3 |
| CIS 360 | 3 |
| CIS 499 | 3 |

EMPHASIS REQUIREMENTS

| | |
|--------------------|---|
| CIS 102 or CIS 202 | 3 |
| CIS 250 | 3 |
| CIS 330 | 3 |
| CIS 498 | 3 |

ADDITIONAL REQUIREMENTS

| | |
|---------------------------------|-----|
| MATH 204, MATH 240, or BA 325 * | 3-4 |
| MATH 211-212 or 311 | 3-6 |

| | |
|--|-------|
| ELECTIVES (Including required minor *) | 19-29 |
|--|-------|

| | |
|---------------------|-------|
| TOTAL FOR BS DEGREE | 125** |
|---------------------|-------|

*Select appropriate courses according to the minor chosen. Approved minors are listed in the description for the major.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: COMPUTER INFORMATION SYSTEMS
EMPHASIS: NETWORKING

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|-----|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts * | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science | 4 |
| Laboratory Science | 4 |
| Logic & Analytical Thought (MATH 121 or 131) | 3 |
| Mathematics (MATH 125 or 132) | 3 |
| Political Economy* | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|---------|---|
| CIS 120 | 3 |
| CIS 130 | 4 |
| CIS 230 | 4 |
| CIS 231 | 4 |
| CIS 235 | 3 |
| CIS 240 | 3 |
| CIS 320 | 3 |
| CIS 321 | 3 |
| CIS 360 | 3 |
| CIS 499 | 3 |

EMPHASIS REQUIREMENTS

| | |
|--------------------|---|
| CIS 102 or CIS 202 | 3 |
| CIS 250 | 3 |
| CIS 340 | 3 |
| CIS 341 | 3 |
| CIS 440 | 3 |

ADDITIONAL REQUIREMENTS

| | |
|---------------------------------|-----|
| MATH 204, MATH 240, or BA 325 * | 3-4 |
| MATH 211-212 or 311 | 3-6 |

| | |
|--|-------|
| ELECTIVES (Including required minor *) | 16-26 |
|--|-------|

| | |
|---------------------|-----|
| TOTAL FOR BS DEGREE | 125 |
|---------------------|-----|

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

*Select appropriate courses according to the minor chosen. Approved minors are listed in the description for the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: COMPUTER INFORMATION SYSTEMS
EMPHASIS: DUAL ENGINEERING

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|-----|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies (ECON 321) | 3 |
| History (HIST 101, 102, 111, 112) | 3 |
| Humanities/Literature | 3 |
| Humanities/Literature | 3 |
| Laboratory Science (CHEM 111) | 4 |
| Laboratory Science (CHEM 112) | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy (ECON 201) | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|----------------------|---|
| CIS 120 | 3 |
| CIS 130 | 4 |
| CIS 230 | 4 |
| CIS 231 | 4 |
| ECE 272 (at Clemson) | 4 |
| CIS 240 | 3 |
| CIS 320 | 3 |
| CIS 321 | 3 |
| CIS 360 | 3 |
| CIS 499 | 3 |

NOTE: Students must take ECE 272 (Computer Organization) at Clemson in place of CIS 235, which is a core requirement at Lander.

ADDITIONAL REQUIREMENTS

| | |
|-------------------------|---|
| CIS 202 | 3 |
| MATH 308, 311, or 325 * | 3 |
| MATH 133 | 1 |
| PHYS 211 | 4 |
| PHYS 212 | 4 |

NOTE: Computer Engineering courses at Clemson complete the requirements in this area.

ELECTIVES

REQUIRED MATHEMATICS MINOR

| | |
|----------|---|
| MATH 231 | 3 |
| MATH 232 | 3 |
| MATH 240 | 4 |

TOTAL FOR BS DEGREE 125

* These three Mathematics courses are all required for the Computer Engineering Degree from Clemson. Students should take at least one at Lander. The others will be taken at Clemson.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

**Students in this program must complete Clemson University requirements for a BS in Computer Engineering. Credits transferred from Clemson complete the required hours for graduation at Lander.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS

| Course | Credit Hour |
|--|--------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science (PSYC 101) | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (PHYS 211) | 4 |
| Laboratory Science (PHYS 212) | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |
| CORE REQUIREMENTS | |
| CIS 130 | 4 |
| MATH 231 | 3 |
| MATH 232 | 3 |
| MATH 240 | 4 |
| MATH 308 | 3 |
| MATH 311 | 3 |
| MATH 325 | 3 |
| MATH 400 | 1 |
| ADDITIONAL REQUIREMENTS | |
| CIS 102, 202, or 230 | 3-4 |
| MATH 321 | 3 |
| MATH 431 | 3 |
| MATH 322 or 432 | 3 |
| Major Electives | 9 |
| ELECTIVES | 28-35 |
| TOTAL FOR BS DEGREE | 125 |

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS
CERTIFICATION: SECONDARY TEACHER

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|-----|
| Behavioral Science (PSYC 101) | 3 |
| FALS | 1 |
| Fine Arts (ART 101, MUSI 101 OR THTR 201) | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature (ENGL 214 or ENGL 221) | 3 |
| Humanities (PHIL 102) | 3 |
| Laboratory Science (PHYS 211) | 4 |
| Laboratory Science (PHYS 212) | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |

TOTAL GENERAL EDUCATION REQUIREMENT 45-51

CORE REQUIREMENTS

| | |
|----------|---|
| CIS 130 | 4 |
| MATH 231 | 3 |
| MATH 232 | 3 |
| MATH 240 | 4 |
| MATH 308 | 3 |
| MATH 311 | 3 |
| MATH 325 | 3 |
| MATH 400 | 1 |

ADDITIONAL REQUIREMENTS

| | |
|----------------------|-----|
| CIS 102, 202, or 230 | 3-4 |
| MATH 321 | 3 |
| MATH 350 | 3 |
| MATH 351 | 3 |
| MATH 431 | 3 |
| MATH 322 or 432 | 3 |
| MATH 451 | 3 |
| BIOL | 4 |

TEACHER CERTIFICATION REQUIREMENTS

| | |
|-----------|-----|
| EDUC 202 | 3 |
| EDUC 203 | 0.5 |
| EDUC 240 | 3 |
| EDUC 320 | 1 |
| EDUC 329 | .5 |
| EDUC 351 | 3 |
| EDUC 429 | 1 |
| EDUC 499 | 1 |
| EDUC 461 | 11 |
| PSYC 203 | 3 |
| SPED 223 | 3 |
| Fine Arts | 1 |

TOTAL FOR BS DEGREE

125-132

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE

MAJOR: MATHEMATICS

PROGRAM: DUAL ENGINEERING

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS *(For approved courses see the General Education section.)*

| | |
|--|--------------|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies (ECON 321) | 3 |
| History (HIST 101, 102, 111, or 112) | 3 |
| Humanities (Literature) | 3 |
| Humanities (Literature) | 3 |
| Laboratory Science (PHYS 211) | 4 |
| Laboratory Science (PHYS 212) | 4 |
| Logic & Analytical Thought (MATH 131) | 3 |
| Mathematics (MATH 132) | 3 |
| Political Economy (ECON 201) | 3 |
| Wellness (PEES 165) | 3 |
| Writing (ENGL 101) | 3 |
| Writing (ENGL 102) | 3 |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |

CORE REQUIREMENTS

| | |
|----------|---|
| CIS 130 | 4 |
| MATH 231 | 3 |
| MATH 232 | 3 |
| MATH 240 | 4 |
| MATH 308 | 3 |
| MATH 311 | 3 |
| MATH 325 | 3 |
| MATH 400 | 1 |

ADDITIONAL REQUIREMENTS

| | |
|-----------------|---|
| MATH 321 or 431 | 3 |
|-----------------|---|

MAJOR ELECTIVES

6

EMPHASIS REQUIREMENTS

| | |
|----------|---|
| CIS 202 | 3 |
| MATH 133 | 1 |
| CHEM 111 | 4 |
| CHEM 112 | 4 |

ELECTIVES

0-4

TOTAL FOR BS DEGREE

125-127

SENIOR YEAR: STUDENT TRANSFERS TO CLEMSON UNIVERSITY. 31 semester hours required to complete the engineering degree at Clemson will count toward the requirements for the BS degree in mathematics at Lander. Of these, 5 semester hours of engineering courses will count toward the mathematics requirements. Students must complete the Clemson degree requirements for a BS in Engineering to obtain the BS degree from Lander University.

Speech 101 and CIS 230 are strongly encouraged for all engineering dual-degree majors.

CIS 231 is recommended for computer engineering and electrical engineering.

Math 204 is recommended for industrial engineering.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

DEPARTMENT OF NURSING

The Lander University Department of Nursing offers a baccalaureate nursing program which prepares men and women who demonstrate evidence of potential academic success to provide high quality, holistic nursing care in a variety of settings to diverse clients across the lifespan. The purpose of the Department of Nursing program is to prepare graduates for the professional nursing roles of caregiver, leader, and consumer of research through didactic and clinical learning experiences, and to provide the foundation for advanced studies in nursing.

The graduates are prepared to:

1. Apply the nursing process within the Neuman Systems Model to promote an optimal level of wellness through the use of primary, secondary, and tertiary prevention/intervention strategies for individuals, families and communities;
2. Synthesize nursing theory with knowledge from selected other disciplines as a basis for care giving, communication, therapeutic interventions, and critical thinking;
3. Use appropriate problem-solving approaches in varied settings to promote wellness for diverse client systems;
4. Demonstrate leadership strategies to advance nursing practice and the nursing profession;
5. Utilize nursing research findings to improve the quality of nursing practice; and
6. Incorporate established standards of professional nursing as the foundation for own nursing practice.
7. Generic program graduates are eligible to take the licensing examination to qualify as registered nurses.

Accreditation

The Bachelor of Science in Nursing program is approved by the State Board of Nursing for South Carolina and is accredited by the National League for Nursing Accrediting Commission (61 Broadway- 33rd floor, New York, NY, 10006, Ph. 212-363-5555).

Curriculum

The generic nursing curriculum is designed for completion in four academic years. Registered nurses may complete an RN to BSN option (see page 216). Generic students are admitted to the nursing major following completion of 30 semester hours college credit. Students who do not enroll in required English, science, and mathematics courses in their first year may require additional time for completion.

NURSING MAJOR

Admission Requirements

Department of Nursing criteria for admission, progression, and graduation differ from those of Lander University. The nature of nursing as an applied discipline requiring mastery of complex academic and clinical knowledge for entry into practice necessitates different criteria.

Application Procedure

Application materials are obtained from the Lander University Admissions Office. The completed application must be returned to the Admissions Office. It is the applicant's responsibility to ensure that all materials are received by the specific dates required.

Students who meet the admission qualifications listed below are admitted first into prenursing. Following successful completion of courses required in the freshman year, students are admitted into the nursing major at the sophomore level, and progress through the program of study based on meeting the MINIMUM progression requirements at each level. (In the event there are more qualified applicants than available space, admission will be determined by the nursing faculty based on the cumulative Lander grade point average of each student.)

Eligibility to become licensed as a registered nurse in South Carolina

Students are advised that the following requirements apply to persons seeking to become licensed as registered nurses in South Carolina

1. Age – at least eighteen years (filing of birth certificate required).
2. Completion of all requirements for graduation from an approved school of nursing.
3. The State Board of Nursing for South Carolina “has determined that criminal convictions or pending criminal charges for any of the following crimes should be treated as prima facie evidence that an applicant or lapsed licensee is unfit or unsuited to engage in the profession of nursing:
 - a. Crimes of violence (e.g. murder, manslaughter, criminal sexual assault, crimes involving the use of deadly force, assault and battery of a high and aggravated nature, assault and battery with intent to kill)
 - b. Crimes involving the distribution of illegal drugs
 - c. Crimes that involve moral turpitude (excluding fraudulent checks and shoplifting).” (See South Carolina Board of Nursing website www.lnr.state.sc.us).
4. Earned a passing grade on the NCLEX-RN examination.

Requirements to qualify for admission to prenursing

A. Generic Students

1. A Verbal SAT score of 450 or better plus a Math SAT score of 450 or better or an ACT score of 19 or better.
2. Proof of high school graduation or equivalent (GED of 200 or better).
3. Completion of high school chemistry and biology.
4. Completion of three (3) units of high school math.

The specified SAT scores of 450 Verbal and 450 Math or ACT of 19 are required because these tests are established indicators of academic ability. The prenursing curriculum coursework emphasizes chemistry, math, and other applied sciences which require a high level of cognitive ability.

B. Transfer Students (Internal and External)

1. A cumulative grade point average (GPA) of 2.6 (not rounded) or better on twelve (12) hours of graded college course work.

C. Second Degree Students

1. A cumulative grade point average (GPA) of 2.6 (not rounded) or better in first degree.

The 2.6 (not rounded) GPA is required for transfer students and second degree students because the prenursing course work emphasizes chemistry, math, and other applied sciences which require a high level of cognitive ability.

Requirements for continuation in prenursing

- A. Maintain a cumulative Lander grade point ratio (institutional) of 2.6 (not rounded) by the end of the second semester.
- B. A minimum grade of “C” in all required nursing, writing (ENGL 101, 102), mathematics (MATH 121, 211), and science (CHEM 105/111, 106/112, BIOL 202, 203, 204, 304) courses.
- C. Maintain enrollment at LANDER UNIVERSITY during both semesters of the academic year, or be on official leave-of-absence status.

Failure to meet these requirements will result in reclassification as a general education major after the student’s second semester at Lander. Those students failing to meet ONLY the GPA requirement must reapply to the Department of Nursing to be considered for readmission to prenursing once a 2.6 (not rounded) cumulative Lander (institutional) GPA is reached again.

A minimum cumulative Lander 2.6 (not rounded) (institutional) GPA is required for continuation in the prenursing curriculum because the academic requirements of the nursing program are rigorous, become progressively more difficult, and require strong academic ability.

Requirements for admission into the nursing major

Students who wish to be considered for admission to the nursing major as a sophomore must apply in writing to the Department of Nursing. New classes are admitted twice each year, once in the fall and once in the spring. Applications for admission to the major are due by April 30 for fall admission and by October 15 for spring admission. Applications may be downloaded from the Department of Nursing website or obtained from the Department of Nursing office.

Applicants must meet all 3 of these requirements to be considered for admission to the nursing major as a sophomore.

1. "C" or higher in these 6 required courses - ENGL 101-102, MATH 121, CHEM 105/111, CHEM 106/112, BIOL 202 (Human Anatomy).
2. GPA requirement
 - If a - current Lander student (prenursing or other major): cumulative Lander GPA (Institutional GPA on Bearcat Web) of at least 2.6 (not rounded) on 30 semester hours at Lander (not counting developmental courses)
 - If a transfer student: at least 30 semester hours (not counting developmental courses) of college work including 12 semester hours at Lander with a cumulative Lander GPA (Institutional GPA on Bearcat Web) of at least 2.6 (not rounded).
 - If already possess a baccalaureate degree: at least cumulative GPA of 2.6 (not rounded) on previous college work; otherwise, must meet transfer student GPA requirements
3. Application to Nursing Major submitted by the respective deadline (April 30 or October 15)
 - Deadline for completed application is **April 30**
 - Admission decisions made by **May 31**
 - Completed clinical clearance materials due by July 1; any student not meeting this deadline will forfeit his/her seat in the class
 - Admission contingent on maintaining GPA >2.6 in any summer school courses
 - Start sophomore nursing courses in fall semester; complete 6 semesters of nursing courses in sequence and graduate in December two years later (example: begin courses January 07 & graduate December 09)

A grade of "C" or above is required in mathematics, writing, chemistry, biology, and required nursing courses. Nursing education is a cumulative process, in which the prerequisite course sequence establishes a foundation for subsequent content mastery in nursing courses and successful entry into practice.

Requirements for progression in the nursing major

- A. Maintain a cumulative Lander grade point average (institutional) of 2.6 (not rounded) assessed each semester including summers.
- B. Complete the following required courses on schedule with a grade of "C" or above)
 - MATH 211
 - BIOL 203, 204, 304
 - NURS 165, 232, 233, 235, 240, 242
 - NURS 303, 345, 346, 392, 393
 - NURS 408, 409, 412, 414, 415, 416, 419, 460

Students must adhere to course repeat limitations as listed in the section on Graduation Requirements.

A grade of "C" or above must be earned in all required courses prior to enrolling in subsequent nursing courses.

- C. Complete and return required annual documentation providing coverage for the complete academic year, including summer as applicable, by July 1 or November each year on the Department of Nursing Health Screening form for the following:
 1. CPR: Certification for Healthcare Provider/Professional Rescuers (valid through April/December as appropriate)
 2. Current health and accident insurance (valid through April/December as appropriate)
 3. Current professional student liability insurance (valid through April/December as appropriate)
 4. Acceptable health status based on physical examination by a nurse practitioner or physician.
 5. Current immunity to meet clinical agency requirements.

Forms are available from the Department of Nursing.

- D. Maintain enrollment at Lander University during both semesters of the academic year, or be on official leave-of absence status.
- E. Accepted by all affiliated clinical agencies after SCLED background checks. (Students denied access to clinical sites as a result of criminal background check will be transferred to General Education.)

Any student who fails to meet the cumulative grade point average requirement each semester will be reclassified as prenursing and must reapply to the Department of Nursing to be considered for readmission to the nursing major upon attainment of the requirements and space available in that class. Any student who exceeds the graduation limitation of number and/or type of course repeats will be reclassified as a general education major.

NOTE: Exceptions to the above requirements will be considered based on written letter of petition to the nursing faculty.

Out of Sequence Students

Following admission to the nursing major, students who earn a “D” or below in a required nursing, science, writing, or mathematics course will be classified internally as “prenursing/out of sequence”. Such students may rejoin the sequence on a space available basis when course prerequisite criteria have been successfully met. In the event there is insufficient space available in that class, the student who is out of sequence is obliged to make alternative academic decisions (i.e., delay major, change major, take other courses, etc.) Students already progressing in the class have priority for space in a class. Students returning to the nursing program after having been out of sequence as a result of withdrawal, required course repeats, or GPA less than 2.6 (not rounded) must be advised by their nursing faculty advisor before registering for any course.

Advanced Placement

Prenursing students may qualify for advanced placement into a nursing major class already in progress on a space available basis. (For example, a prenursing student may be placed into the current sophomore class.)

Students who meet requirements for admission to the nursing major will be considered for advanced placement based on the following criteria:

1. The number of students selected to progress will be determined by the number of spaces available in the class in progress.
2. Generic students must have earned at least 24 hours credit from Lander University; transfer or second degree students must have earned at least 12 hours from Lander University.
3. Students must have completed (or be enrolled in) all required courses for the class in progress.
4. Students will be prioritized for advanced progression based on cumulative grade point average at Lander University (institutional).

Graduation Requirements

A. Completion of Lander University requirements for graduation.

In addition students:

- B. must complete required nursing, mathematics (MATH 121, 211), writing (ENG 101, 102), and science (CHEM 105/111, 106/112, BIOL 202, 203, 204, 304), courses with a minimum grade of “C”.
- C. must complete required nursing major courses within five years prior to graduation.
- D. may not repeat any required course more than one time each.
- E. may not repeat more than two (2) required courses, in which a grade below “C” was earned, with ONLY one required nursing (NURS/NURN) course repeat. (Students wishing to repeat required nursing courses in which a grade of C or above was earned must request approval by letter of petition to the nursing faculty.)
- F. must successfully complete (excluding registered nurse students) a comprehensive standardized nursing content examination (see Comprehensive Exit Examination under Department of Nursing Policies).

Nursing program graduation requirements exceed those of the university as indicators that the student has developed a current (within five years after admission to the sophomore level) and comprehensive nursing knowledge base supported by an adequate foundation in science and mathematics.

NURSING HONORS PROGRAM

Lander University offers a Bachelor of Science in Nursing Honors Program. The purpose is to promote development of the graduate nurse as scholar, leader, and world citizen. The requirements for a Bachelor of Science in Nursing with Honors degree include:

1. Cumulative Lander GPA (institutional) of 3.3 or better in both overall course work and nursing upon graduation.
2. Completion of a nursing honors synthesis project (NURS 480) that exemplifies scholarship within the discipline of nursing through discovery (research), practice (application), teaching, or integration.

This project will be guided by a nursing faculty member who is designated as the honors chairperson for the project, and is selected by the student. The proposal for this project will be developed before the end of the senior fall semester and will be approved by a majority vote of the nursing faculty.

The project will be of sufficient quality to receive three (3) hours credit in NURS 480: Nursing Honors Synthesis and will be submitted for publication in a professional journal or be submitted for presentation at a professional meeting, and will be presented to nursing faculty, students, and practicing nurses.

Students interested in participating in the Bachelor of Science in Nursing with Honors degree program must submit a completed application form to the Department of Nursing office prior to the end of their junior year in the Department of Nursing.

DEPARTMENT OF NURSING POLICIES

Faculty Advisors

A faculty advisor within the College of Science and Mathematics is assigned to each prenursing student for academic planning. A nursing faculty advisor is assigned to each nursing major for academic planning. The advisor serves as a resource person for academic and other concerns related to student experiences while enrolled in the nursing program.

Comprehensive Exit Examination

Generic nursing students must successfully complete a comprehensive nursing content examination as one of the requirements in NURS 460: Clinical Problem Solving. This examination is required to support successful and timely entry into practice following graduation.

NURS Hours Required for Transfer Students

A maximum of 93 semester hours will be accepted for graduation credit for students transferring from regionally accredited four year colleges. Students must complete at least 25% of the total semester hours through instruction by Lander University. (Lander University policy)

- Generic nursing students who transfer nursing credits from other institutions must complete a minimum of 23 semester hours (including 7 laboratory hours*) of required nursing major courses through Lander University in order to earn a Bachelor of Science degree at Lander University.

*A laboratory hour is defined as the semester hour credit allocated for the campus or clinical laboratory component of required nursing courses. For example, NURS 412 (four semester hours) allocates 2 credit hours to lecture and 2 credit hours to clinical laboratory.

The nursing courses required for transfer and second degree students will be determined on an individual basis based on review of transcript(s) and course syllabi by the Chair with input from the Academic Concerns Committee.

Special Expenses

In addition to University tuition and fees, expenses for nursing students include tort and professional liability insurance (approximate cost is \$40 per year --\$2,000,000/\$4,000,000 required); criminal background check (\$18.00- \$25.00), health insurance coverage; Hepatitis B vaccine in accord with clinical agency policy (approximate cost varies \$115/\$180 series if not already immunized); nursing uniforms (approximate cost is \$200); travel to and from hospitals, health centers, and other clinical agencies; fees for professional achievement examinations administered by the school, professional workshop fees; and fees for the National Council Licensure Examination administered by the South Carolina State Board of Nursing. Also, students must become certified in CPR (for Healthcare Providers/Professional Rescuers) prior to entering the clinical nursing courses and must maintain CPR certification throughout the clinical experiences (approximate cost \$40 per year).

Core Performance Standards.

In order to perform safe patient care, students must meet core performance standards and functional abilities for admission and progression, as published by the Southern Council on Collegiate Education for Nursing (SCCEN). A copy is available from the Department of Nursing.

Drug Screening.

Students are required to comply with any clinical agency requirements for drug screening.

Petitioning

Students have the right to request an exception to the application of academic policies of the Department of Nursing. To do so, the student must submit the request in writing to the Nursing Faculty Organization.

Scholarships/Awards

All nursing students are eligible to be considered for scholarships available through the Department of Nursing. These scholarships are listed in the *Nursing Student Handbook* at <http://www.lander.edu/nursing>; additional information is available from faculty advisors.

Student Organizations and Activities

All nursing students are encouraged to participate in the pre-professional nursing organization through membership in the local, state, and national levels of the Student Nurses' Association. Annual dues are approximately \$35.00 to \$45.00. Registered nurse students are encouraged to participate in the American Nurses Association.

The Department of Nursing provides the academic base for the Mu Zeta Chapter of the Honor Society of Nursing, Sigma Theta Tau International. Students are invited to membership based on academic and leadership criteria in their senior year.

Nursing students are eligible to join University student organizations and committees.

Regulations for Clinical Nursing Courses

In addition to the regulations of the University as a whole, the following additional regulations apply to students in nursing. These provisions are required to meet regulations of health care agencies used for clinical laboratory experiences.

1. Attendance at Clinical Laboratories.

Students must meet all Department of Nursing requirements for clinical nursing courses, as listed on the Initial Health Screening Form and the Annual Update Form. These requirements must be met each year by July 1. Students are required to attend all nursing laboratories with absences permitted only because of sickness or other unavoidable occurrence which course faculty determine make it impossible to attend the laboratory.

2. Criminal Background Checks

Students denied access to a clinical site based upon the results of the Criminal Background Check (SCLED/FBI) will be transferred to General Education.

Students must update their Criminal Background Checks each semester in which they take clinical courses

3. Health Requirements.

In addition to meeting the health requirements of the University, students entering the clinical nursing courses are required to provide evidence of annual tuberculosis (TB) screening; documentation of rubella (measles) immunization or titer (if titer is negative rubella vaccine is required); evidence of varicella (chicken pox) immunization or titer; and current immunization against tetanus (tetanus-toxoid within 10 years), polio, and Hepatitis B, and annual physical examination by a nurse practitioner or physician.

4. Insurance Requirements.

Students enrolled in clinical nursing courses must carry tort and professional liability insurance (information available through the Department of Nursing) and personal health and accident insurance.

5. Transportation to Clinical Practice Sites.

Each student is responsible for transportation to and from hospital and other clinical resources. Each student is expected to have access to an automobile to permit experience with home care of clients in both urban and rural areas. Each student is expected to have a valid driver's license.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE

MAJOR: NURSING

| Course | Credit Hour |
|--|--------------|
| GENERAL EDUCATION REQUIREMENTS <i>(For approved courses see the General Education section.)</i> | |
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | 0-6 |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM 105 OR 111) | 4† |
| Laboratory Science (CHEM 106 OR 112) | 4† |
| Logic & Analytical Thought (MATH 121) | 3† |
| Mathematics (MATH 211) | 3† |
| Political Economy | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3† |
| Writing (ENGL 102) | 3† |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |

CORE REQUIREMENTS

| | |
|-----------------|-----------|
| BIOL 202 | 4† |
| BIOL 203 | 4† |
| BIOL 204 | 4† |
| BIOL 304 | 3† |
| NURS 232 | 1† |
| NURS 233 | 3† |
| NURS 235 | 4† |
| NURS 242 | 5† |
| NURS 345 | 5† |
| NURS 346 | 5† |
| NURS 392 | 4† |
| NURS 393 | 4† |
| NURS 408 | 4† |
| NURS 409 | 4† |

ADDITIONAL REQUIREMENTS

| | |
|----------------------|-----|
| NURS 165 | 2† |
| NURS 240 | 3† |
| NURS 303 | 3† |
| NURS 412 | 4† |
| NURS 415 | 3† |
| NURS 416 | 2† |
| NURS 419 | 1† |
| NURS 460 | 2† |
| NURS 499 | 1† |
| ELECTIVES | 0-6 |
| TOTAL FOR BSN DEGREE | 126 |

†Must earn a "C" or better in each course.

Clinical Laboratory Credit Ratio: 1 hour credit for 3 hours contact time per week.

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.

BSN COMPLETION FOR REGISTERED NURSES

Lander University offers an option for licensed registered nurses to complete a Bachelor of Science in Nursing degree with learning experiences concentrated in community health, leadership, management, and research. The BSN completion option for Registered Nurses is offered in an online format. The online option is available to registered nurses and features web based delivery that will enable registered nurse students to attend class at home and at their convenience via the Internet. Graduates will acquire professional level knowledge and skills to practice nursing in traditional and diverse settings and to enter graduate study in nursing and related fields. The option is approved by the State Board of Nursing for South Carolina and accredited by the National League for Nursing Accrediting Commission (61 Broadway, New York, NY 10006, phone: 212-363-5555).

Admission and Progression Policies

Complete Lander University admission process. Transfer credit from previous schools will be evaluated at this time.

Requirements for admission as **RN/BSN** student.

1. Current nursing license as an RN in state where student will be doing clinicals.
2. "C" or higher in these 5 required courses – ENGL 101-102, BIOL 202 (Human Anatomy), BIOL 203 (Human Physiology) (2 semesters combined A&P course OK), BIOL 204 (Microbiology)
3. GPA requirement: Cumulative GPA of at least 2.6 (not rounded) at last school attended
4. Application to Lander University submitted by respective deadline (July 15 for fall, November 15 for spring, April 15 for summer)

Timeline and additional information about RN/BSN admission:

- Admission to the major is done year round.
- Deadlines for completed applications are listed above. It is possible to complete nursing courses in one calendar year if starting in the summer.
- Most RN's choose to take courses part-time since they are working full-time
- Start online nursing courses (NURN 307) any semester, although remaining courses only taught online once a year.
- Graduate after all required Nursing and Biology courses plus all general education courses completed, including a minimum of 32 semester hours from Lander.

Registered nurses earn advanced standing credit that satisfies up to 39 hours of required nursing courses upon the successful completion of the bridging course NURN 307: Professional Transition for Registered Nurses with a grade of B or above.

RN to BSN Completion Option Courses Offered Online

| <u>Course</u> | <u>Credit Hours</u> |
|---|---------------------|
| NURN 340: Enhanced Physical Assessment for RN's | 3* |
| NURN 303: Research | 3 |
| NURN 307: Professional Transition/RN | 4 |
| NURN 412: Leadership & Management | 4* |
| NURN 414: Prof. Development in Nursing | 1 |
| NURN 415: Community Health Nursing | 3* |
| NURN 416: Community as Client | 2* |
| NURN 420: Nursing Seminar for RNs | 1 |
| BIOL 304: Pathophysiology | 3 |
| NURN 310: Global/Nonwestern Studies | 3 |
| NURN 203: Wellness | 2** |
| <u>NURN 290 (Electives-maximum of 3 credit)</u> | <u>2</u> |
| Total | 31 |

* One (1) credit hour is earned for three (3) contact hours of laboratory.

**One (1) additional credit hour of wellness activity (PEES) is required for this course.

- Complete FALS (1 Lander credit hour)
- Complete at Lander University or any accredited institution of higher learning the following general education core requirements:

| Course | Credit Hours |
|------------------------------|---------------------|
| Behavioral Science | 3 |
| Fine Arts | 3 |
| Foreign Language | 0-6* |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM) | 4 |
| Logical & Analytical Thought | 3 |
| Math (MATH 211) | 3 |
| Political Economy | 3 |
| Wellness Lab | 1 |
| <u>Electives</u> | <u>0-6</u> |
| Total | 35 |

*If foreign language is exempted, student needs an additional 6 hours of electives.

NOTE: All degree requirements must be completed within 5 years of admission to the RN/BSN Completion Option. A total of 126 semester hours is needed to graduate from the nursing program.

Lander University Policies

Lander University offers proficiency examinations and advanced placement in General Education subject areas. Students may acquire up to 30 hours of credit through advanced placement. Contact Instructional Services in the Carnell Learning Center for further information about testing.

Credit may be earned by transfer credits from other colleges and universities:

- A maximum of 64 semester hours from a regionally accredited technical or two-year college will be accepted as credit.
- A maximum of 93 semester hours from a regionally accredited four-year institution will be accepted as credit.

For degree completion, at least 25% (32 hours) of total semester credit hours must be earned through instruction by Lander University. A minimum of 12 semester hours in required nursing courses must be earned through instruction by Lander University.

Registered nurses may meet the Lander University general education core curriculum requirement in laboratory science by completing a minimum of 16 hours of laboratory science courses that include 4 hours of chemistry.

Department of Nursing Policies for RN/BSN Students

Faculty Advisors. A nursing faculty advisor is assigned to each student for academic planning. The advisor serves as a resource person for academic and other concerns related to student experiences while enrolled in the nursing program.

Special Expenses. In addition to University tuition and fees, expenses for nursing students include tort and professional liability insurance; health insurance coverage; travel to and from hospitals, health centers, and other clinical agencies; and professional workshop fees and criminal background check course fee. Students must become certified in CPR (Healthcare Provider/Professional Rescuer) prior to entering the clinical nursing courses and must maintain CPR certification throughout the clinical experiences. .

Scholarships/Awards. All nursing students are eligible to be considered for scholarships available through the Department of Nursing. These scholarships are listed in the *Nursing Student Handbook* at <http://www.lander.edu/nursing>; additional information is available from faculty advisors.

Student Organization and Activities. Registered nurse students are encouraged to participate in the American Nurses Association and other professional nursing organizations.

The Department of Nursing provides the academic base for Mu Zeta Chapter of the Honor Society of Nursing, Sigma Theta Tau International. Students are invited to membership based on academic and leadership criteria in the fall of their senior year.

Nursing students are eligible to join University student organizations and committees.

Attendance at Clinical Laboratories. In addition to the regulations of the University as a whole, the following additional regulations apply to students in nursing. These provisions are required to meet regulations of health care agencies used for clinical laboratory.

Clinical Laboratory Experiences Clinical experiences for RN/BSN students will be arranged collaboratively with the student, course faculty, and health care agencies. Students are expected to adhere to any arranged schedule unless other arrangements are made prior to a scheduled experience. Unavoidable absences will be made up based on the availability of clinical facilities.

Core Performance Standards. In order to perform safe patient care, students must meet core performance standards and functional abilities for admission and progression, as published by the Southern Council on Collegiate Education for Nursing (SCCEN). A copy is available from the Department of Nursing.

Drug Screening. Students are required to comply with any clinical agency requirements for drug screening.

Criminal Background Checks

Students denied access to a clinical site based upon the results of the Criminal Background Check will be transferred to General Education.

Health Requirements. In addition to meeting the health requirements of the University, students entering the clinical nursing courses are required to provide evidence of annual tuberculosis (TB) screening; documentation of rubella (measles) immunization or titer (if titer is negative, rubella vaccine is required); evidence of varicella (chicken pox) immunization or titer; and current immunization against tetanus (tetanus-toxoid within 10 years), polio, Hepatitis B, and a physical examination by a nurse practitioner or physician, criminal background check (SLED/FBI).

Insurance Requirements. Students enrolled in the clinical nursing courses must carry tort and professional liability insurance and personal health and accident insurance.

Transportation to Clinical Practice Sites. Each student is responsible for transportation to and from hospital and other clinical resources. Each student is expected to have access to an automobile to permit experience with home care of clients in both urban and rural areas. Each student is expected to have a valid driver's license.

Clinical Laboratory Exemption Students may exempt the clinical laboratory requirement of BSN completion courses based on professional certification or validated clinical competence. In order to exempt, the student must apply in writing to the Department of Nursing and document certification or clinical competence equivalent to the clinical objectives for the course for which an exemption is requested.

Degree and General Policies

Graduation Requirements

A. Completion of Lander University requirements for graduation.

In addition, students:

- B. must complete required nursing, mathematics (MATH 211), writing (ENGL 101, 102), and science (CHEM 105/111, BIOL 202, 203, 204, 304), with a minimum grade of "C";
- C. must complete required nursing major courses within five years prior to graduation;
- D. may not repeat any required courses more than one time each; and
- E. may not repeat more than two (2) required courses, ONLY one of which can be a nursing (NURS/NURN) course.

FALS Requirements for the RN/BSN Completion Options

FALS Requirements for the RN/BSN Completion Option are listed below. (For details, see page 45).

- Attendance at Lander-approved, main campus FALS events;
- completion and submission of required documentation (FALS cards);

Attendance at events of cultural/aesthetic value at theaters, museums and galleries in the students' home areas:

- attendance validation by tickets and memo on institution's letterhead;
- completion of response forms on the events attended;
- submission of response forms for approval by the Director of the RN/BSN Completion Option and/or the FALS Committee.

This FALS option is open ONLY to registered nurse students enrolled in the RN/BSN Completion Option.

Attendance at non-credit bearing professional conferences of an hour or more in duration and approved by professional nursing organizations or the faculty of the Department of Nursing:

- Submission of certificates of attendance for approval by the FALS Committee at the end of each semester.

This FALS option is open ONLY to registered nursing students enrolled in the RN-to-BSN Completion Option.

- Students may not earn more than 1 FALS point for each conference attended regardless of total conference length.

PROGRAM REQUIREMENTS

DEGREE: BACHELOR OF SCIENCE
MAJOR: NURSING
PROGRAM: COMPLETION FOR REGISTERED NURSES

Course

Credit Hour

GENERAL EDUCATION REQUIREMENTS

Required for graduation from Lander University (may be taken at any regionally accredited college or university).

For approved courses see the General Education section.

| | |
|--------------------------------------|-------|
| Behavioral Science | 3 |
| FALS | 1 |
| Fine Arts | 3 |
| Foreign Language | 0-6 |
| Foreign Language | |
| Global Issues/ Nonwestern Studies | 3 |
| History | 3 |
| Humanities/Literature | 3 |
| Humanities | 3 |
| Laboratory Science (CHEM 105 OR 111) | 4* |
| Laboratory Science | 4* |
| Logic & Analytical Thought | 3† |
| Mathematics (MATH 211) | 3 |
| Political Economy | 3 |
| Wellness | 3 |
| Writing (ENGL 101) | 3#† |
| Writing (ENGL 102) | 3#† |
| | |
| TOTAL GENERAL EDUCATION REQUIREMENT | 45-51 |

CORE REQUIREMENTS

| | |
|----------|------|
| BIOL 202 | 4*#† |
| BIOL 203 | 4*#† |
| BIOL 204 | 4*#† |
| BIOL 304 | 3† |
| NURS 232 | 1Δ |
| NURS 233 | 3Δ |
| NURS 235 | 4Δ |
| NURS 242 | 5Δ |
| NURS 345 | 5Δ |
| NURS 346 | 5Δ |
| NURS 392 | 4Δ |
| NURS 393 | 4Δ |
| NURS 408 | 4Δ |
| NURS 409 | 4Δ |

ADDITIONAL REQUIREMENTS

| | |
|----------|----|
| NURN 303 | 3† |
| NURN 307 | 4† |
| NURN 340 | 3† |
| NURN 412 | 4† |
| NURN 415 | 3† |
| NURN 416 | 2† |
| NURN 420 | 1† |
| NURN 499 | 1† |

ELECTIVES 0-6

TOTAL FOR BS DEGREE 126

*Registered nurses may meet the Lander University general education requirement in laboratory science by completing a minimum of 16 hours of laboratory science courses that include 4 hours of chemistry.

Prerequisite courses for admission to the BSN Completion Option

†Must earn a "C" or better in each course

Δ Earned advanced standing credit based on current nursing license and completion of NURN 307 with a grade of "B" or better

Coursework must include at least 30 hours earned in 300 or above level courses, of which 12 hours must be in the major.