

Richard A. Henson

School of Science and Technology

Dr. Thomas W. Jones, Dean

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Dean

Devilbiss Hall 235, 410-543-6425

Advising Coordinator

Devilbiss Hall 138, 410-548-7711

Biological Sciences

Devilbiss Hall 140, 410-543-6054

Chemistry

Devilbiss Hall 302, 410-543-6480

Environmental Health Science

Devilbiss Hall 111, 410-543-6499

Geography & Geosciences

Devilbiss Hall 220, 410-543-6460

Health Sciences

Clinical Laboratory Science/Medical Technology

Power Professional Building 253, 410-543-6365

Respiratory Therapy

Power Professional Building 250, 410-543-6365

Mathematics and Computer Science

Power Professional Building 101, 410-543-6471

Nursing

Power Professional Building 201, 410-543-6401

Physics

Devilbiss Hall 302, 410-543-6480

School Information

The Richard A. Henson School of Science and Technology, endowed in 1988, originally included the departments of Biological Sciences, Chemistry and Physics, Computer Science, Geography and Geosciences and Mathematics. The Department of Physics was separated from Chemistry in 1990 and the departments of Computer Science and Mathematics were combined in 1991. A dual-degree program in biology and environmental/marine science was added in 1990, a major in environmental health science approved in 1991, and a degree in computer science was added in 2000. In 1993, the former School of Nursing and Health Sciences was combined with the School of Science and Technology creating the departments of Health Sciences and Nursing.

Richard A. Henson, founder and chairman of Henson Aviation, endowed the School of Science in 1988 creating the Richard A. Henson School of Science and Technology. An avid pilot, he founded the Henson Flying Service in his hometown of Hagerstown, MD, in 1931 when

he was only 21 years old. During World War II he was a test pilot for Fairchild Industries in Hagerstown, then developing and manufacturing training and fighting planes for this nation's wartime flyers. After the war he turned his ideas and expertise as a flyer toward civil aviation and in 1967 started the first commuter service for Allegheny Airlines connecting Hagerstown to Baltimore and Washington, D.C. In 1981 he moved his corporate headquarters to Salisbury describing this as "the model commuter city in the United States." After a period of phenomenal growth he sold the airline to Piedmont Aviation Inc. in 1983, which in turn was bought out by USAir in 1987. Over the last 10 years, Henson has given numerous substantial financial gifts to other local educational institutions as well as the YMCA, the Boy Scouts of America, the Peninsula Regional Medical Center and the Greater Salisbury Committee.

The Henson School's mission is to provide students with the knowledge and skills they need to function as professionals within their disciplines and as informed citizens on issues of science and technology. This knowledge and skill can serve students in recognizing, evaluating and making decisions about scientific concerns.

The curricula provide sound foundations for health science, nursing, science and mathematics and computer science majors and include courses supporting the University's General Education mission. In addition to its integral role in liberal arts education, the school provides core courses in science for several programs in other schools at the University.

Students in the Henson School of Science and Technology work closely with their advisors on curriculum, program planning and career development. Besides traditional majors in the sciences, students can select from a variety of interdisciplinary, dual-degree and pre-professional programs. Students are encouraged to engage in undergraduate research projects, internships and cooperative learning experiences. Faculty coordinators are available in each department to assist students in arranging internships and co-op experiences. Graduates from the school typically begin careers in science, technology and public education or continue their education in graduate or professional schools.

There are several scholarships relating directly to the School of Science and Technology. The endowment of the school established the Richard A. Henson Scholars Program. These scholarships are available to high-ability students majoring in any department within the school, and can be renewed annually. To encourage interest and scholarship within the field, the Tidewater Environmental Health Association established a scholarship program for students majoring in environmental health science. A unique scholarship program developed by K&L Microwave is available for students majoring in one of the sciences and minoring in one of the fields available in the Perdue School of Business. Finally, there are a number of scholarships available for students majoring in nursing and health sciences. More information is available in the "Financial Aid" section of this catalogue, and inquiries should be directed to the dean.

Specific programs within the Henson School of Science and Technology are accredited by the following professional organizations:

*American Chemical Society Committee on Professional Training
Commission on Accreditation of Allied Health Education Programs
National Accrediting Agency for Clinical Laboratory Sciences
National Environmental Health Science and Protection
Accreditation Council
National League for Nursing Accrediting Commission*

Biological Sciences

Chair

Associate Professor Ellen M. Lawler, Ph.D.; *ornithology, pathophysiology*

Professors

Augustine G. DiGiovanna, Ph.D.; *biology of humans, aging*
William L. Grogan, Ph.D.; *entomology, evolutionary biology*
John R. Molenda, Ph.D.; *microbiology, environmental health*
Harry E. Womack, Ph.D.; *ecology, parasitology*

Associate Professors

Mark F. Frana, Ph.D.; *microbiology, molecular/cell biology*
Stephen C. Gehrich, Ph.D.; *anatomy, physiology*
Paul A. Greccay, Ph.D.; *marine ecology, ichthyology*
Mark A. Holland, Ph.D.; *plant/molecular biology, genetics*
Elichia A. Venso, Ph.D.; *environmental health, air and water quality, environmental radioactivity*
Theodore R. Wiberg, Ph.D.; *respiratory physiology*

Assistant Professors

Ann M. Barse, Ph.D.; *fish and parasite ecology*
Dragoljub D. Bilanovic, Ph.D.; *wastewater engineering, aquatic chemistry and microbiology*
Christopher H. Briand, Ph.D.; *plant morphology/anatomy*
Herbert G. Chew Jr., Ph.D.; *cardiovascular/nervous system physiology*
Clement L. Counts, Ph.D.; (joint appointment with UMES) *marine science, ecology*

Samuel Geleta, Ph.D.; *plant/soil science, agronomy*
Kimberly L. Hunter, Ph.D.; *plant population genetics, polyploidy in plants*
Roman V. Jesien, Ph.D. (joint appointment with UMES); *natural sciences*
Judith M. Stribling, Ph.D.; *wetland biogeochemistry, plant ecology*
E. Eugene Williams, Ph.D.; *cell biology, membrane biochemistry*

Lecturers

Jennifer S. Kiefer, Ph.D.; *pharmacology, toxicology*
Joan E. Maloof, Ph.D.; *pollination biology, rare plant identification*
Charles H. Neal Jr., M.Ed.; *human anatomy, physiology*
Barbara J. Pollock, Ph.D.; *genetics, microbiology*
Betty Lou Smith, M.Ed.; *general biology*

The Department of Biological Sciences offers degrees in the biological sciences, environmental health science and, through cooperation with the University of Maryland Eastern Shore, a program leading to dual degrees in biology and environmental/marine science. The department's mission is threefold:

1. Help students majoring in biology and associated health disciplines, environmental health and environmental/marine science prepare for advanced degree work or post-graduate employment.
2. Help students not majoring in science develop appreciation and fundamental knowledge of the principles governing life.
3. Nourish in all students the ability to apply the scientific process and to think critically about contemporary problems in the biological sciences.

The department shares the University's commitment to developing in students the fundamental communication skills that characterize educated persons and the technical knowledge and skills that will allow them to become outstanding professional biologists.

The biology program consists primarily of a traditional science curriculum, educating students to work as professional biologists in many prominent sub-disciplines. The environmental health science degree (see page 130) and the environmental/marine science dual degree programs are applied programs leading to graduate school or employment in these areas.

The Department of Biological Sciences operates under the guidelines "Resolutions on the Use of Animals in Research, Testing and Education" as adopted in 1990 by the American Association for the Advancement of Science (AAAS).

Major in Biology

Students majoring in biology must complete a mini-

minimum of 40 credit hours in biology with a 2.0, including the following:

1. Complete the following biology core:

	Credits
BIOL 121 Biological Principles and Processes	4
BIOL 122 Biological Principles and Processes	4
BIOL 225 Ecology	4
BIOL 350 Cell Biology	4
BIOL 360 Genetic Analysis	3
or	
BIOL 370 Molecular Genetics	3
BIOL 418 Biology Seminar	1
BIOL 422 Vertebrate Physiology	4
or	
BIOL 430 Plant Physiology	4
or	
BIOL 215 Human Anatomy and Physiology	4
and	
BIOL 216 Human Anatomy and Physiology	4

Biology majors are required to achieve a grade of "C" or better in BIOL 121 and 122 before enrolling in any biology courses for which they are a prerequisite. Grades of "C" or better in these two courses are also required by the department for students graduating as majors.

2. Complete an additional 16 hours of approved biology credit, 12 hours of which must be at the 300/400 level.

Approved courses include ENVH 210, 301 and 302.

3. Satisfy the following related science courses:

	Credits
CHEM 121 General Chemistry I	4
CHEM 122 General Chemistry II	4
CHEM 221 Organic Chemistry I	4

4. Satisfy the following math requirement:

MATH 155 Modern Statistics	3
or	
MATH 160 Introduction to Applied Calculus	3
or	
MATH 201 Calculus I	4

5. Complete one of the following physical science courses:

GEOG 105 Introduction to Physical Geography	4
GEOG 200 Applications in GIS	3
GEOG 401 Soil, Water and Environment	3
GEOL 103 Introduction to Physical Geology	3
PHYS 121 General Physics I	4
PHYS 221 Physics I	4

The following courses are highly recommended for all biology majors as is a year of physics since they are usually required for graduate study in the discipline:

	Credits
CHEM 222 Organic Chemistry II	4
CHEM 407 Biochemistry	4

The following courses may be taken as general electives, but are not acceptable for credit toward a major in biology:

	Credits
BIOL 101 Fundamentals of Biology	4
BIOL 105 Biology and Society	3
BIOL 110 Human Biology	4
BIOL 217 Nutrition	3
BIOL 219 Biology of Human Aging	3
BIOL 220 Humans and the Environment	4
BIOL 416 Research in Biology	3
BIOL 419 Biology Seminar	1
BIOL 450 Internship	1-6

In addition to satisfying departmental requirements, students majoring in biology are encouraged to enrich their educational experience by completing a track of study related to their interests and needs:

Botany Track

	Credits
BIOL 312 Plant Taxonomy	3
BIOL 324 Plant Morphology	3
BIOL 325 Plant Anatomy	4
BIOL 412 Algae and Fungi	4
BIOL 430 Plant Physiology	4

Microbiology Track

	Credits
BIOL 211 Microbiology	4
BIOL 322 Parasitology	3
BIOL 323 Medical Microbiology	4
BIOL 333 Immunology	4
BIOL 445 Virology	3

Zoology Track

	Credits
BIOL 313 Comparative Anatomy	4
BIOL 316 General Entomology	3
BIOL 320 Biology of the Vertebrates	3
BIOL 321 Invertebrate Zoology	3
BIOL 411 Vertebrate Embryology	4
BIOL 422 Vertebrate Physiology	4

Pre-professional Track

Pre-professional students select their courses according to the admission demands of the professional schools in their areas of interest with the advice of the health professions advisors of the Henson School of Science and Technology Health Programs Committee. These advisors can assist students in developing pre-professional tracks for medicine, dentistry, veterinary medicine, optometry and podiatric medicine. See the "Pre-professional Programs" section of this catalogue for more information.

Accelerated Professional Programs

The Department of Biological Sciences and the University of Maryland at Baltimore (UMAB) Dental Hygiene Department offer a program that qualifies students to apply for entrance to UMAB's dental hygiene program. Students at SSU are guided in career and course election and in completing practical experience in dental hygiene. UMAB dental-hygiene faculty visit the SSU campus to meet with students. Qualified students enter UMAB in their junior year and graduate with University of Maryland bachelor's degrees.

SSU also has seven-year programs with the Pennsylvania College of Optometry, the Pennsylvania College of Podiatric Medicine and the University of Maryland Dental School that lead to the Bachelor of Science and Doctor of Optometry, Podiatric Medicine or Dental Surgery. Normally students take eight years to earn these two degrees when schools are not affiliated.

Teacher Certification

Students seeking certification to teach biology in secondary schools must meet all major requirements with the following specific and additional requirements in related sciences:

	Credits
BIOL 115/MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory	1
or	
CHEM 207 Laboratory Safety	1

Students must also fulfill the math requirement by choosing one of the following courses:

	Credits
MATH 155 Modern Statistics	3

MATH 160	Introduction to Applied Calculus	3
MATH 201	Calculus I	4

In addition, students must also complete the following courses with a grade of C or better:

	Credits	
EDUC 210	School in a Diverse Society	3
EDUC 300	Development and Learning	3
EDUC 306	Principles of Instruction	3
EDUC 308	Audio-Visual Equipment Operation	1
SCED 336	Science Teaching in the Secondary School	3
SCED 339	Secondary/K-12 Methods Visitation	0
EDUC 467	Educating the Mildly Handicapped Child in the Regular Classroom	3
CMAT 250	Instructional Communication	3

Students must also complete the following courses:

	Credits	
SCED 426	Directed Teaching in the Secondary School	6
SCED 428	Directed Teaching in the Secondary School	6
SCED 433	Student Teaching Seminar, Secondary Education	2

In order to enroll in professional education program courses, students must meet the following requirements:

1. Apply for formal admission to the professional program.
2. Complete a minimum of 56 college credits with a minimum of 2.50 GPA, including transfer credits.
3. Have a cumulative minimum GPA of 2.75 in biology, including transfer credits.
4. Show satisfactory results on the PRAXIS I as defined by the University and the Seidel School.
5. Submit at least three positive recommendations from faculty in departments other than education.
6. Obtain written approval of the application from their advisor(s).

In July 1998, the Maryland State Board of Education adopted regulations mandating all secondary/K-12 pre- and in-service teachers have six hours course work in reading. Teaching Reading in the Content Areas Part I (SCED 422) and Teaching Reading in the Content Areas Part II (SCED 424) have been approved by the Maryland State Department of Education as courses to satisfy this mandate.

Students completing the biology major and teacher certification program should obtain the program curriculum guide and seek advisement from the biological science education specialist in the Department of Biological Sciences.

Dual Degree Program in Biology And Environmental/Marine Science

SSU and UMES offer a dual-degree program in biology and environmental/marine science. Students from SSU who complete the program receive a Bachelor of Science in biology from SSU and a Bachelor of Science in environmental science with the marine ecology option from UMES.

Students wishing to enroll in this program are initially registered as pre-dual degree majors (pre-ENVS) and enter the dual degree program once they have completed BIOL 121, BIOL 122, CHEM 121 and CHEM 122 with a combined GPA of 2.5 or higher.

These students pursue their biology major at SSU, completing all biology major requirements with the following modifications:

1. SSU students take a minimum of 23 semester credit hours on the UMES campus. As part of the 16 hours

of biology elective requirements, SSU students must take the following courses:

	Credits	
BIOL 201*	Marine Zoology	4
BIOL 202*	Marine Botany	4
BIOL 401	Wetland Ecology	4
BIOL 410	Estuarine Biology	3

2. In addition to completing requirements for the biology major, SSU students are required to complete the following courses:

	Credits	
ENVS 202*	Oceanography	4
ENVS 221*	Principles of Environmental Science	4
ENVS 411*	Water Pollution	4
or		
ENVS 434*	Air Pollution	4
ENVS 460*	Earth Science	4
GEOG 105	Introduction to Physical Geography	4
PHYS 121	General Physics I	4
PHYS 123	General Physics II	4
MATH 155	Modern Statistics with Computer Analysis	3
MATH 201	Calculus I	4
or		
MATH 160	Introduction to Applied Calculus	3
XXX XXX	** Environmental Elective	3

* offered at UMES only; "C" or better required

** select one from GEOG 200, 321, 401, 402; or CHEM 381; ECON 415; or POSC 460

NOTE: Because course numbers may not be the same at both institutions it is important that students check their program plans carefully with their advisors.

The checksheet/curriculum guide for the program is available from the departments of Biological Sciences at both Salisbury State University and the University of Maryland Eastern Shore.

Minor in Biology

See "Minors" section for details.

Transfer Students

Transfer students seeking the degree in biology must complete a minimum of 15 credit hours of courses in biology at Salisbury State University.

Curriculum Guide: Bachelor of Science In Biology

The following is a sample sequence of courses for students majoring in biology. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
BIOL 121	Biological Principles and Processes	4
CHEM 121	General Chemistry I	4
ENGL 101	Composition I	3
HIST 101	World Civilizations	3
		14
BIOL 122	Biological Principles and Processes	4
CHEM 122	General Chemistry II	4
ENGL 102	Composition II	3
HIST 102	World Civilizations	3
PHEC 106	Personalized Health/Fitness	3
		17
SOPHOMORE YEAR		
BIOL 225	Ecology	4
CHEM 221	Organic Chemistry I	4
	General Education Electives	6
		14
BIOL 350	Cell Biology	4
CHEM 222	*Organic Chemistry II	4
BIOL XXX	Biology Elective	4
	Math Elective	3
		15

JUNIOR YEAR

BIOL 360	Genetic Analysis	3
or		
BIOL 370	Molecular Genetics	3
BIOL XXX	Biology Elective	4
	General Education Elective	6
	*Physical Science Elective	3-4
		16-17
BIOL XXX	Biology Elective	4
	Group IIB Elective	3
	General Education Elective	3
	Electives	4
		14

SENIOR YEAR

BIOL 418	Biology Seminar	1
	***Physiology Core Requirement	4-8
	General Education Elective	3
	Electives	8
		16
CHEM 417	**Biochemistry	4
BIOL XXX	Biology Electives	5
	Electives	8
		17

* one course from GEOG 105, GEOG 200, GEOG 401, GEOL 103, PHYS 121, PHYS 221

** strongly recommended but not required

*** if BIOL 215 is selected, 216 must also be taken

Chemistry

Chair

Associate Professor David F. Rieck, Ph.D.; *inorganic chemistry*

Professors

Frederick A. Kundell, Ph.D.; *physical chemistry*

Edward G. Senkbeil, Ph.D.; *biochemistry*

Edward T. Shaffer, Ph.D.; *organic chemistry*

John L. Tyvoll, Ph.D.; *analytical chemistry*

Assistant Professors

Anita Brown, Ph.D.; *computational chemistry*

E.J. Crane, Ph.D.; *biochemistry*

Miguel O. Mitchell, Ph.D.; *organic chemistry*

Lecturers

Mary Antlfinger-Norton, M.Ed.; *chemistry education*

Mindy Howard, M.S.; *chemistry*

Wayne L. Shelton, M.Ed.; *environmental chemistry*

The Chemistry Department offers programs leading to the Bachelor of Science in chemistry, including an American Chemical Society (ACS)-certified program.

The department's curricula foster the development and verbal and written expression of rational thought. The faculty attempt to impart an understanding and appreciation of chemistry along with the knowledge, safe laboratory skills and personal integrity necessary for students to be productive members of the larger community of professional chemists. Because chemistry is an experimental discipline, the laboratory experience fosters a sense of self-confidence and independence, as well as an appreciation for the importance of original investigation. Since the study of chemistry is discovery-based, the department is committed to providing meaningful and interesting research experiences in well-equipped laboratories.

Professional chemists work in such diverse fields as medicine, space and marine science, molecular engineering, food preparation and processing, and the synthesis of material from lipstick to high strength composites. As frontiers in the natural sciences approach molecular dimensions, chemistry is truly becoming the fundamental science.

The faculty in the department strive to promote a feeling of "belonging" among majors. Student/faculty pic-

tics and softball/volleyball games, student participation in national and regional professional meetings, student employment in the department, and activities of the SSU Student Chemical Society all contribute to the informal, yet professional, atmosphere of the department.

Major in Chemistry

The Chemistry Department offers a broad selection of programs for students seeking careers in chemistry and the physical sciences. The Bachelor of Science in chemistry requires a minimum of 120 credits for graduation. Chemistry majors must have at least a C average in their major courses for graduation. Transfer students majoring in chemistry are required to complete at least 15 hours in chemistry at Salisbury State University. Students may select from the following programs:

American Chemical Society-Certified Degree

The ACS degree is widely recognized in the chemistry profession as a standard of excellence. This program is designed for motivated students with good scholastic records who intend to enter graduate programs in chemistry or closely related fields.

The requirements for the ACS-certified degree are as follows:

	Credits	
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
CHEM 207	Laboratory Safety	1
CHEM 212	Chemistry of the Elements	2
CHEM 221	Organic Chemistry I	4
CHEM 222	Organic Chemistry II	4
CHEM 321	Analytical Chemistry	4
CHEM 333	Instrumental Analysis	3
CHEM 341	Physical Chemistry I	3
CHEM 342	Physical Chemistry II	3
CHEM 406	Inorganic Chemistry	3
CHEM 381	Environmental Chemistry	3
or		
CHEM 412	Organic Chemistry III	3
or		
CHEM 499	Special Topics in Chemistry	3
CHEM 410	Chemical Research (2 semesters)	6
CHEM 415	Seminar	2
CHEM 417	Biochemistry I	4
CHEM 441	Advanced Experimental Chemistry I	4
CHEM 442	Advanced Experimental Chemistry II	4
MATH 201	Calculus I	4
MATH 202	Calculus II	4
BIOL 121	Biological Principles and Processes	4
or		
BIOL 122	Biological Principles and Processes	4
PHYS 221	Physics I	4
PHYS 223	Physics II	4
PHYS 309	Mathematical Physics	3

Chemistry

The department also offers a baccalaureate program designed for direct entry into the chemistry profession. With the proper selection of electives, a chemistry major can be used for entry into the pre-professional programs of dentistry, medicine, veterinary medicine, pharmacy or patent law (see Pre-professional Programs). The requirements for the chemistry major are as follows:

	Credits	
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
CHEM 207	Laboratory Safety	1
CHEM 212	Chemistry of the Elements	2
CHEM 221	Organic Chemistry I	4
CHEM 222	Organic Chemistry II	4
CHEM 321	Analytical Chemistry	4
CHEM 333	Instrumental Analysis	3

CHEM 341	Physical Chemistry I	3
CHEM 342	Physical Chemistry II	3
CHEM 406	Inorganic Chemistry	3
CHEM 413	Internship/Co-Op in Chemistry	3
or		
CHEM 410	Chemical Research	3
CHEM 415	Seminar	2
CHEM 441	Advanced Experimental Chemistry I	4
CHEM 442	Advanced Experimental Chemistry II	4
MATH 201	Calculus I	4
MATH 202	Calculus II	4
BIOL 121	Biological Principles and Processes	4
or		
BIOL 122	Biological Principles and Processes	4
PHYS 221	Physics I	4
PHYS 223	Physics II	4
PHYS 309	Mathematical Physics	3

Biochemistry Track

This baccalaureate program is designed for students interested in developing a more theoretical biochemistry background and engaging in more advanced biochemistry laboratory experiences than in the traditional chemistry program. This track provides a diversified background for post-graduate health-related programs. The requirements are as follows:

	Credits	
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
CHEM 207	Laboratory Safety	1
CHEM 212	Chemistry of the Elements	2
CHEM 221	Organic Chemistry I	4
CHEM 222	Organic Chemistry II	4
CHEM 311	Survey of P. Chemistry	3
CHEM 321	Analytical Chemistry	4
CHEM 333	Instrumental Analysis	3
CHEM 406	Inorganic Chemistry	3
CHEM 413	Internship	3
or		
CHEM 410	Research	3
CHEM 415	Seminar	2
CHEM 417	Biochemistry I	4
CHEM 418	Biochemistry II	3
CHEM 419	Biochemical Methods	4
CHEM 441	Advanced Experimental Chemistry I	4
MATH 201	Calculus I	4
MATH 202	Calculus II	4
PHYS 221	Physics I	4
PHYS 223	Physics II	4
BIOL 121	Biological Principles and Processes	4
BIOL 122	Biological Principles and Processes	4
BIOL 350	*Cell Biology	4
or		
BIOL 370	*Molecular Genetics	3
BIOL XXX	*Upper-level Elective	3-4

* minimum of seven credits in upper-level biology courses including one course with lab

Pre-engineering

This is a 3-2 dual-degree program in cooperation with the University of Maryland and Widener University (see Dual-Degree Engineering Program). The pre-engineering requirements are as follows:

1. Complete the following core:

	Credits	
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
CHEM 221	Organic Chemistry I	4
CHEM 222	Organic Chemistry II	4
CHEM 321	Analytical Chemistry	4
CHEM 341	Physical Chemistry I	3
CHEM 342	Physical Chemistry II	3
MATH 201	Calculus I	4
MATH 202	Calculus II	4
MATH 310	Calculus III	4
MATH 311	Differential Equations I	4
COSC 120	Computer Programming	4
PHYS 221	Physics I	4

PHYS 223	Physics II	4
PHYS 313	Intro to Modern Physics	3
ECON 211	Micro-Economic Principles	3
or		
ECON 212	Macro-Economic Principles	3
ENGR 110	Statics	3
ENGR 221	Dynamics	3

2. Satisfy 30 semester hours in science or engineering courses at the receiving institution.

Students must complete all SSU General Education and other graduation requirements prior to attending the engineering program.

Accelerated Professional Programs

The University has a cooperative agreement with the Pennsylvania College of Optometry and the University of Maryland School of Pharmacy that lead to the Bachelor of Science and Doctor of Optometry or Doctor of Pharmacy. Normally students require eight years to earn these two degrees when schools are not affiliated.

Teacher Certification

This MSDE-approved teacher education program certifies students to teach chemistry in the secondary schools. The requirements are as follows:

	Credits	
CHEM 107	Chemistry: A Humanistic Perspective	4
or		
CHEM 109	Energy and Environment	4
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
CHEM 207	Laboratory Safety	1
CHEM 212	Chemistry of the Elements	2
CHEM 221	Organic Chemistry I	4
CHEM 222	Organic Chemistry II	4
CHEM 321	Analytical Chemistry	4
CHEM 341	Physical Chemistry I	3
CHEM 342	Physical Chemistry II	3
MATH 201	Calculus I	4
MATH 202	Calculus II	4
BIOL 101	Fundamentals of Biology	4
PHYS 221	Physics I	4
PHYS 223	Physics II	4
PHYS 309	Mathematical Physics	3
EDUC 210	School in a Diverse Society	3
EDUC 300	Development and Learning	3
EDUC 306	Principles of Instruction: Research, Theory and Practice	3
EDUC 308	Audio-Visual Equipment Operation	1
EDUC 336	Science Teaching in the Secondary School	3
EDUC 426	Directed Teaching in the Secondary School	6
EDUC 428	Directed Teaching in the Secondary School	6
EDUC 433	Student Teaching Seminar: Secondary School	3
EDUC 467	Educating the Mildly Handicapped Child in the Regular Classroom	3
CMAT 250	Instructional Communication	3
SCED 339	Secondary/K-12 Methods Visitation	0

In order to enroll in professional education program courses, students must meet the following requirements:

1. Apply for formal admission to the professional program.
2. Complete a minimum of 56 college credits with a minimum GPA of 2.50, including transfer credits.
3. Have a cumulative minimum GPA of 2.75 in chemistry, including transfer grades.
4. Show satisfactory results on the PRAXIS I Examination as defined by the University and the Seidel School.
5. Submit at least three positive recommendations from faculty in departments other than education.
6. Obtain written approval of the application from their advisor(s).

In July 1998, the Maryland State Board of Education adopted regulations mandating all secondary/K-12 pre- and in-service teachers have six hours course work in reading. Teaching Reading in the Content Areas Part I (SCED 422) and Teaching Reading in the Content Areas Part II (SCED 424) have been approved by the Maryland State Department of Education as courses to satisfy this mandate.

Minor in Chemistry

See "Minors" section for details.

Curriculum Guide: Bachelor of Science In Chemistry

The following is a sample sequence of courses for students pursuing the ACS-certified degree in chemistry. Checklists for each of the chemistry major options are available in the Chemistry Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
CHEM 121	General Chemistry I	4
ENGL 101	Composition I	3
HIST 101	World Civilization	3
MATH 201	Calculus I	4
		14
CHEM 122	General Chemistry II	4
ENGL 102	Composition II	3
HIST 102	World Civilization	3
MATH 202	Calculus II	4
	Group IB Elective	3
		17
SOPHOMORE YEAR		
CHEM 221	Organic Chemistry I	4
PHYS 221	Physics I	4
ENGL XXX	Literature Elective	3
	Group IIB Elective	3
		14
CHEM 207	Laboratory Safety	1
CHEM 212	Chemistry of the Elements	2
CHEM 222	Organic Chemistry II	4
PHYS 223	Physics II	4
BIOL 121	Biological Principles and Processes	4
or		
BIOL 122	Biological Principles and Processes	4
		15
JUNIOR YEAR		
CHEM 321	Analytical Chemistry	4
CHEM 341	Physical Chemistry I	3
PHYS 309	Mathematical Physics	3
	Group IB Elective	3
	Group II Elective	3
		16
CHEM 333	Instrumental Analysis	3
CHEM 342	Physical Chemistry II	3
CHEM 417	Biochemistry I	4
PHEC 106	Personalized Health/Fitness	3
	Group IIB Elective	3
		16
SENIOR YEAR		
CHEM 406	Inorganic Chemistry	3
CHEM 410	Chemical Research	3
CHEM 441	Advanced Experimental Chemistry I	4
	Electives	3
		13
CHEM 410	Chemical Research	3
CHEM 415	Seminar	2
CHEM 442	Advanced Experimental Chemistry II	4
CHEM XXX	Chemistry Elective	3
	Electives	3
		15

Computer Science

Program Director

Professor David L. Parker, Ph.D.; *topology, artificial intelligence*

Professors

Homer W. Austin, Ph.D.; *mathematics education, statistics*

E. Lee May Jr., Ph.D.; *functional analysis, operator theory*

Kathleen M. Shannon, Ph.D.; *topology, artificial intelligence*

Robert M. Tardiff, Ph.D.; *probability, applied mathematics*

Associate Professors

Steven M. Hetzler, Ph.D.; *dynamical systems*

Thomas O. Horseman, M.S.; *structured programming, scientific computing*

Philip E. Luft, Ph.D.; *engineering mathematics, signal processing*

Mohammad Moazzam, Ph.D.; *differential equations, numerical analysis*

Barbara A. Wainwright, Ph.D.; *statistics, mathematics education*

Assistant Professors

Michael J. Bardzell, Ph.D.; *algebraic topology*

Harel Barzilai, Ph.D.; *mathematics education, DNA computing, topology*

Dean DeFino, M.S.; *computer architecture, compiler construction*

Malcolm Morrison, Ph.D.; *software engineering, knowledge-based systems, computational linguistics, natural language processing*

Carla N. Schultes, Ph.D.; *differential geometry*

Lecturer

Thomas A. Anastasio, Ph.D.; *data structures, parallel processing, object-oriented graphical user interfaces*

Christopher J. Lewis, M.A.; *mathematics/topology*

The major in computer science, which includes a minor in mathematics, emphasizes software development principles throughout the curriculum and prepares students for graduate study or for careers in computer science, software development or systems analysis. The department provides up-to-date programs as well as undergraduate research, internships and consulting opportunities.

The computer science major requires 18 courses (60-62 credits) arranged in four components:

- I. Mathematics Core for computer science (18 credits) which completes a minor in mathematics;
- II. Lower-Division Computer Science Core (12 credits);
- III. Upper-Division Computer Science Core (18 credits); and
- IV. Four upper-level electives (12-14 credits, selected with the guidance of a faculty advisor).

All required mathematics and computer science courses and all upper-level electives must be completed with grades of C or better (or pass if they are offered only on a pass-fail basis). No course may be taken until all prerequisite courses have been completed with grades of C or better.

Transfer students majoring in computer science are required to complete at least 12 hours of upper-level computer science courses with grades of C or better at Salisbury State University.

Students may not receive credit for computer science courses which are prerequisites for or equivalent to computer science courses for which they have already received native or transfer credit.

I. Mathematics Core for computer science:

		Credits
MATH 201	Calculus I	4
MATH 202	Calculus II	4
MATH 210	Introduction to Discrete Mathematics	3
MATH 213	Statistical Thinking	4
MATH 306	Linear Algebra	3

II. Lower-Division Computer Science Core:

		Credits
COSC 120	Computer Programming	4
COSC 220	Data Structures and Algorithm Analysis	4
COSC 250	Microcomputer Organization	4

III. Upper-Division Computer Science Core:

	Credits
COSC 320 Advanced Data Structures and Algorithm Analysis	3
COSC 350 Systems Software	3
COSC 362 Mathematical Foundations of Computer Science	3
COSC 425 Software Engineering I	3
COSC 426 Software Engineering II	3
COSC 450 Operating Systems	3

IV. Four upper-level electives from the following:

	Credits
COSC 380 Internship*	3
COSC 390 Undergraduate Research Project*	3
COSC 422 Organization of Programming Languages	3
COSC 456 Computer Architecture	3
COSC 482 Computer Graphics	3
COSC 490 Special Topics	3
COSC 495 Directed Consulting*	4
ISMN 385 Telecommunication Systems Management**	3
ISMN 386 Database Management Systems**	3
MATH 471 Numerical Methods**	3
PHYS 322 Digital Electronics**	4
PHYS 411 Microprocessor Architecture**	3
PHYS 412 Microcomputer Interfacing**	3

or other COSC, ISMN, MATH or PHYS courses approved by the chair, including those courses offered at other universities

* COSC 380, 390 (taken for at least three credits) and 495 may be used to satisfy at most one of the upper-level electives

** these courses have prerequisites which are not listed among the courses required in the major

Curriculum Guide: Bachelor of Science in Computer Science

The course offerings in the computer science program permit students to complete degree requirements within four years. Below is a sample sequence of courses for a computer science major.

Calculus and computer programming courses are time-intensive, and students are advised to plan their schedule accordingly, particularly in their first semester. Students who do not take MATH 201 or COSC 120 in their first semester will likely be advised to take three or four computer science courses in each semester during their final two years. Students who are not comfortable with personal computer operation (including windowing, file and directory/folder manipulation, word processing, etc.) or who desire an overview of the computer science discipline should take COSC 116 instead of COSC 120 in their first semester.

College algebra, geometry and trigonometry are prerequisites for all the mathematics courses in this program. Students who have not mastered any of these subjects should take MATH 102 instead of MATH 201 in their first semester.

FRESHMAN YEAR		Credits
MATH 201*	Calculus I	4
COSC 120*	Computer Programming	4
	General Education Courses	6-7
		14-15

* see notes above regarding these courses

MATH 202	Calculus II	4
COSC 220	Data Structures and Algorithm Analysis	4
	General Education Courses	6-7
		14-15

SOPHOMORE YEAR		
MATH 210	Introduction to Discrete Mathematics	3
COSC 320	Advanced Data Structures and Algorithm Analysis	3
	General Education Courses	7-8
		13-14
COSC 250	Microcomputer Organization	4
COSC 362	Mathematical Foundations of Computer Science	3

MATH 306	Linear Algebra	3
	General Education Courses	4-7
		14-17

JUNIOR YEAR		
COSC 350	Systems Software	3
MATH 213	Statistical Thinking	4
	Electives and General Education Courses	8-10
		15-17

COSC 450	Operating Systems	3
COSC XXX	Upper-Level Elective	3
COSC XXX	Upper-Level Elective	3
	Electives and General Education Courses	6-7
		15-16

SENIOR YEAR		
COSC 425	Software Engineering I	3
COSC XXX	Upper-Level Elective	3
	Electives	9-10
		15-16

COSC 426	Software Engineering II	3
COSC XXX	Upper-Level Elective	3
	Electives	9-10
		15-16

Minor in Computer Science

See "Minors" section for details.

Environmental Health Science

Program Director

Associate Professor Elichia A. Venso, Ph.D.; *exposure assessment; environmental radioactivity, tropospheric ozone; water quality*

Professor

John Molenda, Ph.D.; *environmental microbiology; epidemiology; food aspects of environmental health*

Environmental health science is an interdisciplinary science that draws on the basic principles of biology, chemistry, physics, the geosciences and mathematics to identify, characterize, assess and control the impact of environmental factors on human health and environmental protection. Salisbury State University offers a four-year program leading to the Bachelor of Science in environmental health science. (The program is accredited by the National Environmental Health Science and Protection Accreditation Council.) The environmental health science degree plan combines the General Education experience with a strong foundation in the biological, physical, geo and mathematical sciences.

Major in Environmental Health Science

Bachelor of Science requirements for an environmental health science major include the following:

1. Complete the following 32 core credits:

	Credits	
ENVH 210	Introduction to Environmental Health	3
ENVH 301	Principles of Epidemiology	3
ENVH 302	Food Aspects of Environmental Health	3
ENVH 320	Safety and Occupational Health	3
ENVH 330	Solid/Hazardous Waste Management	3
ENVH 425	Toxicology	3
ENVS 430	Ground and Surface Water Quality	4
ENVS 440	Air Quality	4
ENVH 475	Environmental Health Field Studies	6

2. Complete an additional 48-49 related science credits:

	Credits	
BIOL 121	Biological Principles and Processes	4
BIOL 122	Biological Principles and Processes	4
BIOL 211	Microbiology	4
COSC 116	Introduction to Computer Systems	4
CHEM 121	General Chemistry I	4

CHEM 122	General Chemistry II	4
CHEM 221	Organic Chemistry I	4
GEOG 200	Applications in Geographic Information Systems	3
or		
GEOG 319	Geographic Information Systems	3
GEOG 401	Soil, Water and Environment	3
PHYS 121	General Physics I	4
PHYS 123	General Physics II	4
MATH 155	Modern Statistics with Computer Analysis	3
or		
MATH 213	Statistical Thinking	4
MATH 160	Introduction to Applied Calculus	3
or		
MATH 201	Calculus I	4

Curriculum Guide: Bachelor of Science in Environmental Health Science

The following is a suggested sequence of courses for students majoring in environmental health science. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
BIOL 121	Biological Principles and Processes	4
CHEM 121	General Chemistry I	4
COSC 116	Introduction to Computer Systems	4
ENGL 101	Composition I	3
		15
BIOL 122	Biological Principles and Processes	4
CHEM 122	General Chemistry II	4
MATH XXX	Statistics	3-4
ENGL 102	Composition II	3
		14-15

SOPHOMORE YEAR		Credits
ENVH 210	Introduction to Environmental Health	3
BIOL 211	Microbiology	4
CHEM 221	Organic Chemistry I	4
CMAT 100	Fundamentals of Communication	3
		14
ENVH 301	Principles of Epidemiology	3
ENGL XXX	English Literature	3
MATH 160	Introduction to Applied Calculus	3
or		
MATH 201	Calculus I	4
PHEC 106	Personalized Health/Fitness	3
		12-13

JUNIOR YEAR		Credits
ENVH 302	Food Aspects of Environmental Health	3
PHYS 121	General Physics I	4
	Group IB Elective	3
	Group IIB Electives	6
		16
ENVH 320	Safety and Occupational Health	3
ENVH 330	Solid/Hazardous Waste	3
PHYS 123	General Physics II	4
GEOG 200	Geographic Information Systems	3
	Group IIB Elective	3
		16

SUMMER OF JUNIOR YEAR		Credits
ENVH 475	Environmental Health Field Studies	6

SENIOR YEAR		Credits
ENVH 430	Ground and Surface Water Quality	4
GEOG 401	Soil, Water, and Environment	3
HIST 101	World Civilizations I	3
	Elective (minor discipline)	3-4
		13-14
ENVH 440	Air Quality	4
ENVH 425	Toxicology	3
HIST 102	World Civilizations	3
	Elective (minor discipline)	3-4
		13-14

Geography and Geosciences

Chair

Associate Professor Calvin R. Thomas, Ph.D.; *resource management, rural land use, U.S. and Canada*

Professors

Michael E. Folkoff, Ph.D.; *soils, hydrology, cartography*

J. Chapman McGrew Jr., Ph.D.; *spatial analysis, environmental planning*

Robert A. Rosing, Ph.D.; *economic, regional planning*

Associate Professors

Xingzhi Mara Chen, Ph.D.; *GIS, remote sensing, environmental geology*

Brent Skeeter, Ph.D.; *climatology, meteorology*

Assistant Professors

Michael S. Scott, Ph.D.; *GIS, environmental hazards, cartography, remote sensing*

Lecturer

Daniel W. Harris, M.A.; *physical, climatology, meteorology*

The Department of Geography and Geosciences offers a program leading to a Bachelor of Science in geography, a discipline which examines the spatial patterns and interactions of natural, cultural and socioeconomic phenomena on the earth's surface. Geography embraces aspects of both the physical and the social sciences. This integrative, spatial perspective finds concrete expression in land use management—regional/urban planning and development.

Major in Geography

Bachelor of Science requirements for a geography major include the following:

1. Complete the following core courses:

		Credits
GEOG 200	Applications in Geographic Information Systems	3
or		
GEOG 319	Geographic Information Systems	4
GEOG 201	Physical Geography/Weather and Climate	4
GEOG 203	Economic Geography	3
GEOG 204	Spatial Analysis	4
GEOG 301	World Regions	3
GEOG 414	Research and Writing	3
GEOL 103	Introduction to Physical Geology	4

2. Satisfy 15 semester hours of electives in geography, at least 12 semester hours of which must be at the 300/400 level and must include at least six semester hours in non-methodology courses.

3. Complete at least three semester hours in statistics:

		Credits
MATH 155	Modern Statistics with Computer Analysis	3

All courses applied to the major must be completed with grades of C or better. The Department of Geography and Geosciences recommends that the lower-division core courses be completed prior to GEOG 414 and all other upper-division courses. Except for GEOG 204 and 414, the core courses may be taken in any order and a student may register for more than one in a given semester.

Transfer students must complete a minimum of 15 semester hours with grades of C or better in geography at Salisbury State University, at least 12 semester hours of which must be at the 300/400 level. Geography majors seeking certification for teaching in either the elementary or secondary school must meet additional requirements in education. Students pursuing either of these alternatives should contact the Education Department for advisement early in their program.

While geography majors must satisfy departmental requirements, they are encouraged to develop a program suitable to their individual needs. The department has four designated options: mapping sciences and computer applications, environmental planning and re-

source management, earth and atmospheric sciences, and individualized. Each is designed to provide flexible, yet directed preparation toward specific employment opportunities as well as appropriate background for related graduate work. Students seeking guidance about the options, graduate study or career programs should see a departmental advisor.

Minor in Geography

See "Minors" section for details.

Curriculum Guide: Bachelor of Science In Geography

The following is a sample sequence of courses for students majoring in geography. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
ENGL 101	Composition I	3
HIST 101	World Civilizations	3
GEOG XXX	*Geography Core Requirement	3-4
PHEC 106	Personalized Health/Fitness	3
	Group IIIA Elective	3-4
		15-17

ENGL 102	Composition II	3
HIST 102	World Civilizations	3
GEOG XXX	*Geography Core Requirement	3-4
	+Group IB Elective	3
	Group IIB Elective	3
		15-16

SOPHOMORE YEAR		Credits
MATH 155	Modern Statistics with Computer Analysis	3
	Literature Elective	3
	*Geography Core Requirement	3-4
	Group IIIA Elective	3-4
	Group IIB Elective	3
		15-17

GEOG 204	Spatial Analysis	4
GEOG XXX	*Geography Core Requirement	3-4
COSC 116	Introduction to Computer Systems	4
or		
COSC 120	Computer Programming	4
	Group IB Elective	3
		14-15

JUNIOR YEAR		Credits
GEOG XXX	Upper-Level Geography Elective	3
GEOG XXX	*Geography Core Requirement	3-4
	General Elective	9
		15-16

MATH 313	++Survey Design and Sampling	3
GEOG XXX	Upper-Level Geography Electives	9
	General Elective	3
		15

SENIOR YEAR		Credits
GEOG 414	Research and Writing	3
GEOG XXX	Upper-Level Geography Elective	3
	General Electives	9
		15

GEOG XXX	Upper-Level Geography Electives	9
	General Electives	6
		15

* select from GEOL 103 or GEOG 200 or 319, 201, 203 and 301 (may be taken in any order)

+ CMAT 100: Fundamentals of Speech recommended

++ recommended but not required for all geography majors

Health Sciences

Chair

Assistant Professor Johanna W. Laird, M.S.; *immunohematology, clinical chemistry, urinalysis and body fluids*

The Department of Health Sciences consists of programs in clinical laboratory science/medical technology and respiratory therapy. Each provides coursework in the basic sciences, General Education and specialized areas which prepare graduates for national certification in their fields of study. Health sciences students must have an aptitude for science and a good working knowledge of chemistry, biology, physiology and microbiology.

During the first two years of each program, students take prerequisite and General Education courses. The last two years comprise the professional core, offering courses in the major with student laboratories accompanied by rotations through clinical facilities. The courses prepare students to practice in laboratory science or respiratory care under the guidance and supervision of professionals during internships in "real world" environments.

Clinical Laboratory Science/ Medical Technology

Program Director

Assistant Professor Johanna W. Laird, M.S.; *immunohematology, clinical chemistry*

Assistant Professors

Cynthia C. Cowall, M.Ed.; *hematology, clinical microbiology*

Diane L. Davis, Ph.D. (clinical coordinator); *clinical chemistry, immunology*

Clinical Professor

Steven Moore, M.D. (medical director); *pathology*

The Department of Health Sciences offers a program leading to the Bachelor of Science in clinical laboratory science/medical technology, which has traditionally been known as the branch of medicine dealing with the performance of laboratory analyses used in the diagnosis, prognosis and treatment of disease, as well as the maintenance of health. This definition is rapidly undergoing expansion due to the diverse employment opportunities available to clinical laboratory science/medical technology graduates.

The American Society of Clinical Laboratory Science labels graduates "clinical laboratory scientists," since they are prepared for employment or further education in a broad spectrum of areas related to laboratory analysis. Graduates seek careers in clinical settings (hospitals or private laboratories performing tests related to disease conditions in humans and animals), industry (marketing, pharmaceutical, biomedical technology, occupational health, research and development, and quality assurance), research science, health care administration (infection control, health promotion, laboratory consultation) or public health (epidemiology, crime laboratory science, Peace Corps). Many graduates continue education in medicine, dentistry, health law or other graduate programs.

SSU's program provides courses in the basic sciences of chemistry and biology, General Education and specialized areas such as microbiology, immunology, clinical chemistry, hematology, immunohematology and management. Computerization, mathematics, instrumentation and writing are integrated into the curriculum. The diverse courses are coupled with opportuni-

ties to practice these studies in actual clinical laboratories. It is highly recommended that students wishing to pursue the degree seek academic advisement early.

The Bachelor of Science program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Graduates are eligible to take certification examinations offered by various national organizations such as the American Society of Clinical Pathologists (ASCP) and the National Credentialing Agency for Laboratory Personnel (NCALP).

Major in Clinical Laboratory Science/ Medical Technology

The program consists of a basic two-year curriculum of General Education experience and support courses in the biological and physical sciences (lower-division core) followed by two years of professional instruction and training (upper-division core). A total of 120 credit hours is required for graduation in medical technology.

1. Selected science and math courses must be completed:

	Credits
BIOL 121 Biological Principles and Processes	4
and	
BIOL 122 Biological Principles and Processes	4
or	
BIOL 215 *Human Anatomy and Physiology	4
and	
BIOL 216 *Human Anatomy and Physiology	4
BIOL 211 Microbiology	4
CHEM 121 General Chemistry I	4
CHEM 122 General Chemistry II	4
CHEM 221 Organic Chemistry I	4
MATH 155 Modern Statistics with Computer Analysis	3

*students may take a full year of anatomy and physiology to substitute for BIOL 121 and 122

2. Complete the following program courses with the grade of "C" or better:

MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory	1
MDTC 300 Principles of Clinical Laboratory Science	4
MDTC 301 Hematology I	4
MDTC 311 Clinical Microbiology I	4
MDTC 331 Diagnostic Immunology	4
MDTC 341 Clinical Biochemistry I	5
MDTC 401 Hematology II	3
MDTC 402 Hematology III	3
MDTC 403 Urine and Body Fluid Analysis	1
MDTC 411 Clinical Microbiology II	4
MDTC 412 Clinical Microbiology III	3
MDTC 413 Clinical Immunology	1
MDTC 431 Introduction to Transfusion Services	3
MDTC 432 Clinical Practice in Transfusion Services	3
MDTC 441 Clinical Biochemistry II	4
MDTC 442 Automated Clinical Chemistry	2
MDTC 443 Special Clinical Chemistry	3
MDTC 461 Organization and Management of the Laboratory	2
MDTC 471 Clinical Seminar	1

Pre-health Professional Preparation

Students pursuing pre-health options such as pre-medicine need to take courses that meet requirements for specific schools. Selection of courses should be coordinated with the Health Professions Advisory Committee of the Henson School of Science and Technology. These advisors can assist students in meeting these specific requirements. Please see the Pre-professional Programs section of this catalogue for more information.

General Information

Advanced standing will be granted to those individuals who meet acceptable criteria of the University. Applicants who hold certification as medical laboratory technicians may be offered advanced status. Methods include CLEP, transfer of academic credit from accredited institutions and credit for prior life and work experiences.

In their junior and senior years, students must register for and satisfactorily complete three semesters of didactic study, a senior winter term of clinical rotation and a semester of full-time clinical experience at approved clinical affiliates of the program which may include Peninsula Regional Medical Center, Memorial Hospital at Easton, Shore Health Laboratories, Nanticoke Memorial Hospital and Shore Memorial Hospital. Students are responsible for registration fees for fall and spring semesters and winter term, and for registration fees, housing, meals and transportation during the winter term and clinical experience semester. In addition, it is each student's responsibility to have all appropriate vaccinations including the hepatitis B vaccine and a physical examination performed by a personal physician during the senior year prior to clinical rotations.

Placement and progression in courses are determined by program policies. For detailed policies, consult the program handbook, available in the office of the chair.

Major requirements completed seven years prior to admission must be updated in a manner acceptable to NAACLS. Evaluations will be performed on an individual basis.

Admission to Upper Division

Students should declare a major in clinical laboratory science/medical technology early in their academic careers to assure appropriate advisement.

Admission to the upper-division (professional) component of the program during the spring of the sophomore year, is based on satisfactory completion of (or a plan to complete) the lower-division core as well as on professional and technical aptitude for the field.

Students should be aware that there are physical, mental, and emotional demands in the field. A description of the essential functions required by the program is available in the admissions policy. Applicants are required to acknowledge, in writing, that they are aware of these essential functions prior to beginning the program.

Space in the upper division is limited each year; therefore, students should seek admission early. Admission is not guaranteed, even with satisfactory completion of the lower division. To receive a copy of the admission requirements please contact the program office at 410-543-6364 or the department office at 410-543-6365.

Other Science Majors

Students from other science majors such as biology or chemistry are encouraged to seek permission to take courses for elective credit if they have an interest in clinical laboratory medicine. Eligibility for ASCP categorical certification in one area such as clinical microbiology, clinical, chemistry or hematology can be earned by taking an approved plan of courses.

Curriculum Guide: Bachelor of Science In Clinical Laboratory Science/Medical Technology

Students should complete the first two years of coursework as outlined in the curriculum guide prior to beginning the junior year.

The following curriculum plan is subject to revision to reflect current trends and accreditation requirements. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
BIOL 121	* Biological Principles and Processes	4
CHEM 121	General Chemistry	4
ENGL 101	Composition I	3
HIST 101	World Civilizations	3
MDTC 101	Safety in the Biological, Chemical and Clinical Laboratory	1
		15
BIOL 122	* Biological Principles and Processes	4
CHEM 122	General Chemistry	4
ENGL 102	Composition II	3
PHEC 106	Personalized Health/Fitness	3
		14

* Students can take the BIOL 215/216 Anatomy and Physiology sequence in place of BIOL 121/122

SOPHOMORE YEAR		Credits
CHEM 221	Organic Chemistry I	4
MATH 155	Modern Statistics With Computer Analysis	3
ENGL XXX	Literature Elective	3
	Group IB Elective	3
	Group IIB Elective	3
		16
BIOL 211	Microbiology	4
HIST 102	World Civilizations	3
	Group IB Elective	3
	Group IIB Elective	3
CHEM 222	Organic Chemistry II (for chemistry minors and pre-health)	4
		13-17

JUNIOR YEAR		Credits
MDTC 300	Principles of Clinical Laboratory Science	4
MDTC 331	Diagnostic Immunology	4
	Group IIB Elective	3
	Elective	3
		14
MDTC 301	Hematology I	4
MDTC 311	Clinical Microbiology I	4
MDTC 341	Clinical Biochemistry I	5
	Group IIB Elective	3
		16

SENIOR YEAR		Credits
MDTC 401	Hematology II	3
MDTC 411	Clinical Microbiology II	4
MDTC 431	Introduction to Transfusion Services	3
MDTC 441	Clinical Biochemistry II	4
		14
MDTC 402	Hematology III	3
MDTC 403	Urine and Body Fluid Analysis	1
MDTC 412	Clinical Microbiology III	3
MDTC 413	Clinical Immunology	1
MDTC 432	Clinical Practice in Transfusion Services	3
MDTC 442	Automated Clinical Chemistry	2
MDTC 443	Special Clinical Chemistry	3
MDTC 461	Organization and Management of the Laboratory	2
MDTC 471	Clinical Seminar	1
		19

NOTE: Transfer students and medical laboratory technicians should seek individual advisement from the program to prevent duplication of coursework and/or experiences.

Respiratory Therapy

Program Director

Associate Professor Sidney Schneider, Ph.D., RRT, RPFT; *adult/pediatric/neonatal respiratory care, pulmonary function testing, health/fitness*

Clinical Education Director

Assistant Professor Robert Joyner, Ph.D., RRT, *cardiopulmonary critical care/pharmacology*

Associate Professor

Theodore Wiberg, Ph.D., RRT; *cardiopulmonary physiology*

Medical Directors

Adjunct Professor C. Rodney Layton Jr., M.D., certifications from National Board of Medical Examiners, American Board of Internal Medicine (Parts I & II); pulmonary disease

Adjunct Professor William J. Nagel, M.D., certifications from American Board-Internal Medicine, American Board-Pulmonary Diseases

Lecturers

Lisa Joyner, B.S., RRT

Marcy Disbennett, B.S., RRT

The Department of Health Sciences offers a program leading to the Bachelor of Science in respiratory therapy, preparing highly trained health care practitioners who administer care to patients with disorders of the cardiopulmonary system.

Respiratory care is both a diagnostic and therapeutic specialty using specialized equipment and technological procedures. The practice includes the administration of gas mixtures by various appliances, application of mechanical ventilators to assist or control breathing, maintenance of airways, administration of drugs by inhalation, assistance with cardiopulmonary resuscitation, monitoring of heart and lung functions of critically ill patients, and evaluation of patients in the cardiopulmonary laboratories.

Major in Respiratory Therapy

A total of 120 credit hours is required for the baccalaureate degree. The four-year curriculum includes General Education experiences and support courses in the biological and physical sciences as well as professional instruction and training in respiratory care.

1. Complete selected science and math courses:

Credits	
BIOL 211	Microbiology
BIOL 215	Human Anatomy and Physiology
BIOL 216	Human Anatomy and Physiology
CHEM 121	General Chemistry I
CHEM 122	General Chemistry II
MATH 155	Modern Statistics
PHYS 121	General Physics
or	
COSC 116	Introduction to Computer Systems

2. Complete the following program courses with the grade of "C" or better:

Credits	
RESP 210	Foundation Studies in Respiratory Therapy
RESP 301	Patient Care Procedures
RESP 302	Basic Respiratory Procedures/Clinical Practicum
RESP 303	Cardiopulmonary Physiology
RESP 304	Cardiopulmonary Disease
RESP 321	Advanced Respiratory Care
RESP 322	Pharmacology
RESP 323	Clinical Practicum II
RESP 400	Fundamentals of Respiratory Care Research
RESP 401	Neonatal and Pediatric Respiratory Care
RESP 402	Cardiopulmonary Diagnostics and Rehabilitation
RESP 403	Clinical Practicum III
RESP 404	Management Practices in Health Services
RESP 420	Respiratory Care Seminar
RESP 421	Studies in Respiratory Care
RESP 424	Critical Care Specialization
RESP 425	Diagnostics Specialization

Students are required to satisfactorily complete prerequisite courses prior to admission to the professional program. All major requirements must be completed within seven years prior to senior level respiratory therapy experiences. To receive a copy of admission and progression policies, please contact the Respiratory Therapy Department at 410-543-6365. In the final two years of the program, students must complete practical experiences at clinical affiliates such as Peninsula Regional Medical Center, Memorial Hospital at Easton or other clinical sites. Satisfactory completion of the program will qualify students to sit for the National Board of Respiratory Care entry-level and subsequent registry exams.

General Information

A major in respiratory therapy may be declared at any time prior to the clinical experience. However, students with a sincere interest in the profession are encouraged to declare a major early in the college experience in order to take advantage of professional advising and program planning.

Students wishing to obtain the baccalaureate degree who hold associate degrees or who have previously been either certified respiratory therapists (CRT) or registered respiratory therapists (RRT) may apply for advanced standing in the major. Each applicant will be evaluated on an individual basis to determine class standing within the major, and the evaluation process may employ challenge examination, demonstration of proficiency and registry evaluation.

Curriculum Guide: Bachelor of Science In Respiratory Therapy

The following is a sample sequence of courses for students majoring in respiratory therapy. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
ENGL 101	Composition I	3
HIST 101	World Civilizations	3
PSYC 101	General Psychology	3
CHEM 121	General Chemistry	4
	Group IB Elective	3
		16
ENGL 102	Composition II	3
HIST 102	World Civilizations	3
CHEM 122	General Chemistry	4
BIOL 215	Human Anatomy and Physiology	4
	Group IIB Elective	3
		17
SOPHOMORE YEAR		
BIOL 211	Microbiology	4
BIOL 216	Anatomy and Physiology	4
PHYS 121	General Physics	4
	or	
COSC 116	Introduction to Computer Systems	4
PHEC 106	Personalized Health/Fitness	3
		15
MATH 155	Modern Statistics with Computer Analysis	3
RESP 304	Cardiopulmonary Disease	3
SOCI XXX	Sociology Elective	3
RESP 210	Foundation Studies in Respiratory Therapy	3
	Group IB Elective	3
		15
JUNIOR YEAR		
(Foundations of Respiratory Care)		
RESP 301	Patient Care Procedures	4

RESP 302	Basic Respiratory Procedures/Clinical Practicum	5
RESP 303	Cardiopulmonary Physiology	3
ENGL XXX	Literature Elective	3
		15
RESP 321	Advanced Respiratory Care	4
RESP 322	Pharmacology	3
RESP 323	Clinical Practicum II	5
RESP 300	Special Topics	2
		14

SENIOR YEAR

(Critical Care Concepts)

RESP 400	Fundamentals of Research in Respiratory Care	2
RESP 401	Pediatric Respiratory Care	3
RESP 402	Pulmonary Diag. and Rehabilitation	4
RESP 403	Clinical Practicum III	5
RESP 404	Management Practices in Health Sciences	3
		17
RESP 420	Respiratory Care Seminar	3
RESP 421	Study in Respiratory Care	2
RESP 424	Critical Care Specialization	5
RESP 425	Diagnostic Specialization	3
		13
Electives		
RESP 422	Management Specialization	4
RESP 423	Education Specialization	4
RESP 490	Independent Study	1-3

Mathematics and Computer Science

Chair

Professor Kathleen M. Shannon, Ph.D.; *numerical analysis, critical thinking and mathematics*

Professors

Homer W. Austin, Ph.D.; *mathematics education, statistics*

E. Lee May Jr., Ph.D.; *functional analysis, operator theory*

David L. Parker, Ph.D.; *topology, artificial intelligence*

Robert M. Tardiff, Ph.D.; *probability, applied mathematics*

Associate Professors

Steven M. Hetzler, Ph.D.; *dynamical systems*

Thomas O. Horseman, M.S.; *structured programming, scientific computing*

Philip E. Luft, Ph.D.; *engineering mathematics, signal processing*

Mohammad Moazzam, Ph.D.; *differential equations, numerical analysis*

Barbara A. Wainwright, Ph.D.; *statistics, mathematics education*

Assistant Professors

Michael J. Bardzell, Ph.D.; *algebraic topology*

Harel Barzilai, Ph.D.; *mathematics education, DNA computing, topology*

Dean DeFino, M.S.; *computer architecture, compiler construction*

Malcolm Morrison, Ph.D.; *software engineering, knowledge-based systems, computational linguistics, natural language processing*

Carla N. Schultes, Ph.D.; *differential geometry*

Lecturers

Thomas A. Anastasio, Ph.D.; *data structures, parallel processing, object-oriented graphical user interfaces*

Christopher J. Lewis, M.A.; *mathematics/topology*

The Department of Mathematics and Computer Science offers programs leading to the Bachelor of Science in mathematics, including concentrations in computer science and statistics, and to the Bachelor of Science in computer science. The department introduces students to the beauty and utility of mathematics, statistics and computer science in an environment that enhances learning experiences inside and outside the classroom. The department provides up-to-date programs as well as undergraduate research, internship and consulting opportunities.

The major in mathematics encourages students to examine the relationships among pure mathematics, applied mathematics, statistics and computer science. It provides a foundation for graduate work or careers in applied mathematics, statistics, computer science, actuarial science or secondary education. The major in computer science, which includes a minor in mathematics, emphasizes software development principles

throughout the curriculum and prepares students for graduate study or for careers in computer science, software development or systems analysis.

Major in Mathematics

All students must complete the following mathematics major core:

	Credits
MATH 201 Calculus I	4
MATH 202 Calculus II	4
MATH 210 Introduction to Discrete Mathematics	3
MATH 213 Statistical Thinking	4
MATH 306 Linear Algebra	3
MATH 310 Calculus III	4
COSC 120 Computer Programming	4

Students then complete their major in one of five ways: traditional option, applied option, computer science concentration, statistics concentration or teacher certification. By proper choice of electives, it is possible to complete both the traditional option and the applied option without additional credit hours. (See the department for appropriate checklists and advisement.) All required mathematics and computer science courses must be completed with grades of C or better. Some concentrations or tracks may accept the nontraditional courses MATH/COSC 380, 390, 495, but in no case may more than one or the repetition of one count toward the requirements for the major in mathematics.

Traditional Option

In addition to completing the mathematics major core, students must complete these three courses:

	Credits
MATH 311 Differential Equations I	4
MATH 441 Abstract Algebra I	3
MATH 451 Analysis I	3

and must complete a two-semester sequence at the 400-level by taking one of the following:

	Credits
MATH 414 Mathematical Statistics II	3
MATH 442 Abstract Algebra II	3
MATH 452 Analysis II	3

In addition, they must take three more upper-level MATH electives, at least two at the 400 level.

Applied Option

In addition to completing the mathematics major core, students must complete these two courses:

	Credits
MATH 311 Differential Equations I	4
MATH 451 Analysis I	3

and one of these modeling courses:

	Credits
MATH 460 Operations Research	3
MATH 465 Mathematical Models and Applications	3

and this numerical methods courses:

	Credits
MATH 471 Numerical Methods	3

and study the application of mathematics, either by completing one of these courses:

	Credits
MATH/COSC 380 Internship	3
MATH/COSC 495 Directed Consulting	4

or by completing nine credits in any one HEGIS code (not MATH) which applies mathematics and which has been approved in advance by the student's academic advisor.

In addition students must take two 400-level MATH electives.

Computer Science Concentration

In addition to completing the mathematics major core, students must meet the following requirements:

1. Complete the following courses:

	Credits
COSC 116* Introduction to Computer Systems	4
COSC 220 Data Structures and Algorithm Analysis	4
COSC 250 Microcomputer Organization	4
COSC 425 Software Engineering I	3
COSC 450 Operating Systems	3

* the department chair may substitute another course for students with extensive computer expertise

2. Complete four upper-level MATH courses, two of which must be at the 400 level.
3. Complete two upper-level COSC courses.

NOTE: COSC 380, 390 (taken for at least three credits) and 495 may be used to satisfy at most one of the upper-level electives.

Statistics Concentration

In addition to completing the mathematics major core, students must meet the following requirements:

1. Complete the following courses:

	Credits
MATH 313 Survey Design and Sampling	3
MATH 314 Intermediate Applied Statistics	3
MATH 413 Mathematical Statistics I	3
MATH 414 Mathematical Statistics II	3
MATH 493 Advanced Topics in Statistics	3
MATH 3XX Math Elective	3
or	
MATH 4XX Math Elective	3
MATH 4XX Math Elective	3

MATH 380/390/495 may not be used to satisfy the above electives.

2. Satisfy one of the following field experiences:

	Credits
MATH 380 Internship	3
MATH 390 Undergraduate Research Project	3
MATH 495 Directed Consulting	4

Teacher Certification

Mathematics students will be certified to teach mathematics at the secondary level by completing the mathematics major core and by fulfilling the following requirements:

1. Complete one elective mathematics course at the 300 level or higher.
2. Complete five upper-level courses as follows:

	Credits
MATH 406 Geometric Structures	3
MATH 441 Abstract Algebra I	3
MATH 451 Analysis I	3
MATH 460 Operations Research	3
or	
MATH 465 Mathematical Models and Applications	3
MATH 480 History of Mathematics	3

3. Satisfy the following education requirements with a grade of C or better (exception: PSYC 101):*

	Credits
EDUC 210 School in a Diverse Society	3
EDUC 300 Development and Learning	3
EDUC 306 Principles of Instruction: Research: Theory and Practice	3
EDUC 308 Audio-Visual Equipment Operation	1
SCED 335 Mathematics in the Secondary School	3
SCED 339 Secondary/K-12 Methods Visitation	0
SCED 426 Directed Teaching in the Secondary School (in mathematics)	6
SCED 428 Directed Teaching in the Secondary School (in mathematics)	6
SCED 433 Student Teaching Seminar-Secondary Education	3
EDUC 467 Educating the Mildly Handicapped Child in the Regular Classroom	3
PSYC 101 General Psychology	3
CMAT 250 Instructional Communication	3

*students may repeat EDUC/SCED courses only once

In order to enroll in professional education program courses, students must meet the following requirements:

1. Apply for formal admission to the professional program.
2. Complete a minimum of 56 college credits with a minimum GPA of 2.50 including transfer credits.
3. Have a cumulative minimum GPA of 2.75 in math including transfer grades.
4. Show satisfactory results on the PRAXIS I Examination as defined by the University and the Seidel School.
5. Submit at least three positive recommendations from faculty in departments other than education.
6. Obtain written approval of the application from their advisor(s).

In July 1998, the Maryland State Board of Education adopted regulations all secondary/K-12 pre- and in-service teachers have six hours course work in reading. Teaching Reading in the Content Areas Part I (SCED 424) have been approved by the Maryland State Department of Education as courses to satisfy this mandate.

Minor in Mathematics

See "Minors" section for details.

Minor in Statistics

See "Minors" section for details.

General Information

Three units of high school mathematics (including Algebra II and geometry) or college algebra is a prerequisite for all other math courses.

Transfer students majoring in mathematics are required to complete at least 12 hours of upper-level courses in mathematics with grades of C or better at Salisbury State University.

Students may not receive credit for math courses which are prerequisites for or equivalent to math courses for which they have already received native or transfer credit.

Curriculum Guide: Bachelor of Science In Mathematics

The mathematics program is designed to permit students to complete degree requirements within approximately four years. Beyond the first three semesters students should select courses appropriate to their

individual programs of study (as detailed above).

The following is a sample sequence of courses for students majoring in mathematics. However the variety of options within the major and the different interests and backgrounds of students in the program make this sequence inappropriate for many mathematics majors. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
MATH 201	Calculus I	4
COSC 120	Computer Programming	4
or		
COSC 116	*Introduction to Computer Systems	4
	General Education Courses	6-7
		14-15

MATH 202	Calculus II	4
MATH 210	Introduction to Discrete Mathematics	3
MATH 213	Statistical Thinking	
or		
COSC 120	*Computer Programming	4
	General Education Course	3-4
		14-15

SOPHOMORE YEAR

MATH 310	Calculus III	4
MATH 306	Linear Algebra	3
	General Education or EDUC Courses	7-8
		14-15
	MATH, COSC, or EDUC Courses	6-7
	Electives and General Education Courses	9
		15-16

JUNIOR YEAR

MATH, COSC, or EDUC Courses	6-7
Electives and General Education Courses	9
	15-16
MATH, COSC, or EDUC Courses	6-7
Electives and General Education Courses	9
	15-16

SENIOR YEAR

MATH, COSC, or EDUC Courses	6-7
Electives	9
	15-16
MATH, COSC, or EDUC Courses	6-7
Electives	9
	15-16

* students without prior computer expertise are advised to complete COSC 116 prior to enrolling in COSC 120

Nursing

Chair

Associate Professor Elizabeth A. Seldomridge, Ph.D.; *adult health*

Professors

Karen K. Badros, Ed.D., CFNP; *nursing education, administration*

Karin E. Johnson, Dr.P.H.; *adolescent health*

Elizabeth A. Rankin, Ph.D.; *psychiatric/mental health*

Associate Professors

Barbara Ann Butler Kellam, Ph.D., CPNP; *pediatric nursing*

Ruth Carroll, Ph.D.; *family research, death and dying*

Assistant Professors

Susan B. Battistoni, M.S.; *adult health, oncology*

Voncelia S. Brown, M.S.; *community health*

Nancy Elizabeth Drewer, M.S., CFNP; *adult and community health*

Mary K. Kane, M.S.N., CFNP; *psychiatric mental health*

Dorothea McDowell, M.S.; *informatics, adult health*

Tereza G. Sidrak, M.S.; *pediatric nursing*

Catherine M. Walsh, Ph.D.; *health promotion, critical thinking*

Instructors

Michele I. Bracken, B.S., M.S., CNP; *women's health, adult health*

Jane E. Burns, M.S.N.; *psychiatric nursing, leadership in management, political action*

Mary C. DiBartolo, B.S.N., M.B.A.; *adult health, administration*
 Zenovia Qualliotine, M.S., CPNP, CANP (visiting); *health promotion, adult and children's health*

Lecturer

Phyllis Brodsky, M.S.; *maternal-newborn nursing*
 William T. Campbell, B.S.N., M.S.; *adult health, pediatrics*

The Department of Nursing offers three routes to the Bachelor of Science in nursing: one for traditional undergraduate students, a second for registered nurse students and a third for non-nursing college graduates. The primary mission of the department is to facilitate a liberal and professional education that provides opportunities for professional development and self-actualization. Besides educating students in the practice of professional nursing, the department promotes the health of the people in the region through education, service and research. In addition, the department seeks to provide leadership in the development and dissemination of nursing knowledge focused on the changing health care needs of the rural region.

The nursing program is designed to prepare a generalist practitioner qualified to provide professional nursing care to individuals, families and communities at all levels of wellness in a variety of health care settings; promote the quality, availability and accessibility of nursing education and nursing care; and provide quality education for students as a basis for graduate study in nursing.

Educational preparation for nursing involves a sequence of learning experiences in a variety of health care settings with clients of all age groups, of multicultural backgrounds and of various socioeconomic levels.

The program is fully accredited by the National League for Nursing and the Maryland Board of Nursing. Graduates are eligible to take state board examinations for licensure as registered nurses.

Admission to the Nursing Major

Students are admitted to the nursing program in one of three ways:

Incoming freshmen are automatically admitted to the nursing program. Their place in the junior year is guaranteed provided that they maintain a GPA of 2.5 each semester while enrolled in pre-nursing courses.

Students who transfer to SSU with a GPA of 3.25 and 24 earned college credits are guaranteed admission to the nursing program. Once at SSU, they must maintain a GPA of 2.5 each semester while enrolled in pre-nursing courses.

All other students with a minimum GPA of 2.5 may apply to the nursing program by February 15 for admission the following September. Students will be considered on a competitive basis.

General Education credit may be transferred to Salisbury State University from other accredited colleges and universities and credit earned by CLEP examination is acceptable. Lower-division nursing courses are not transferable. Upper-division nursing courses taken at other accredited colleges and universities will be evaluated by the Nursing Department on an individual basis.

Major in Nursing

The nursing program includes a General Education component, support courses in the natural and behavioral sciences, and a series of upper-division nursing

courses for a total of 123 semester hours. The minimum acceptable grade for BIOL 334: Pathophysiology, and all required nursing courses, is C.

Requirements in nursing are subject to change in order to meet standards established by external accrediting agencies. Nursing majors must satisfy the following requirements:

1. Complete the following nursing core:

	Credits
NURS 309 Foundations for Professional Nursing	3
NURS 310 Care of Adults I	3
NURS 311 Adult I CLN	3
NURS 319 Health Assessment	3
NURS 329 Research Methods	3
NURS 350 Care of Adults II	3
NURS 351 Adult II CLN	3
NURS 360 Care of Children	3
NURS 361 Children CLN	3
NURS 370 Maternal-Newborn	3
NURS 371 Maternal-Newborn CLN	3
NURS 380 Psychiatric-Mental Health	3
NURS 381 Psychiatric-Mental Health CLN	3
NURS 430 Community Health	3
NURS 431 Community Health CLN	3
NURS 440 Senior Seminar	3
NURS 441 Internship	3

2. Satisfy the following support courses from other departments:

	Credits
BIOL 211 Microbiology	4
BIOL 215 Human Anatomy and Physiology	4
BIOL 216 Human Anatomy and Physiology	4
BIOL 217 Nutrition	3
BIOL 334 Pathophysiology	4
CHEM 121 General Chemistry I	4
CHEM 122 General Chemistry II	4
MATH 155 Modern Statistics	3
PSYC 101 General Psychology	3
PSYC 300 Development Psychology	3
PSYC 302 Abnormal Psychology	3
SOCI XXX Elective	3

Completion of these courses will partially satisfy groups II and III of the General Education requirements. Students who fail to complete any of the required nursing courses must apply to the Student Policies Committee for readmission to the nursing major.

Curriculum Guide: Bachelor of Science In Nursing

The following is a sample sequence of courses for students majoring in nursing. Required nursing courses may be offered only in the semester indicated. This curriculum guide is subject to refinement to reflect current trends in nursing. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
ENGL 101	Composition I	3
HIST 101	World Civilizations	3
PSYC 101	*General Psychology	3
BIOL 215	*Anatomy and Physiology I	4
	Group IB Elective	3
		16
ENGL 102	Composition II	3
HIST 102	World Civilizations	3
BIOL 216	*Anatomy and Physiology II	4
CHEM 121	*General Chemistry I	4
	Group IB Elective	3
		17
SOPHOMORE YEAR		
ENGL XXX	Literature	3
CHEM 122	*General Chemistry II	4

BIOL 211	*Microbiology	4
PSYC 300	*Developmental Psychology	3
PHEC 106	Individualized Health Fitness	3
		17

BIOL 334	*Pathophysiology	4
BIOL 217	*Nutrition	3
MATH 155	#Modern Statistics	3
PSYC 302	#Abnormal Psychology	3
	Group IIB Elective	3
		16

JUNIOR YEAR

NURS 309	Foundations for Professional Nursing	3
NURS 310	Care of Adults I	3
NURS 311	Adult I CLN	3
NURS 319	Health Assessment	3
SOCI XXX	Sociology Elective	3
		15

NURS 329	Research Methods	3
NURS 350	Care of Adults II	3
NURS 351	Adult II CLN	3
NURS 370	Maternal-Newborn	3
NURS 371	Maternal-Newborn CLN	3
		15

SENIOR YEAR

NURS 360	Care of Children	3
NURS 361	Children CLN	3
NURS 380	Psychiatric-Mental Health	3
NURS 381	Psychiatric-Mental Health CLN	3
	Free Elective	3
		15

NURS 430	Community Health	3
NURS 431	Community Health CLN	3
NURS 440	Senior Seminar	3
NURS 441	Internship	3
		12

* credit must be documented before beginning the major
 # prerequisites to subsequent nursing course

Registered Nurse Students

Salisbury State University participates in the Maryland articulation nursing education model. Under this model, several options for articulating from a diploma or associate nursing program have been developed. These options depend on the year of graduation and the accreditation status of the basic RN program. A brochure, developed especially for registered nurse students, that describes these options in detail, is available upon request from the Nursing Department.

Accelerated Second-Degree Program Track

The Department of Nursing offers an accelerated program track leading to a Bachelor of Science and a Master of Science in nursing for non-nursing college graduates who wish to prepare for professional nursing roles and advanced clinical practice.

There are 84 semester hours in the course of study. The Bachelor of Science in nursing is awarded after successful completion of 44 semester hours. Full-time students normally complete the undergraduate degree requirements and are eligible to take the licensure examination for registered nurses (NCLEX-RN) in three semesters. The master's degree requires a minimum of 40 semester hours beyond those completed for the B.S. in nursing. Details of this program track are presented in the University Graduate Catalogue.

Application forms and specific admission-progression information may be obtained from the Graduate Nursing Office or the Admissions Office.

Curriculum Guide: Accelerated Second-Degree Program Track

The following is a sample sequence of courses for students in the B.S.-M.S. Second Degree Program. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

YEAR I		Credits
NURS 322	Wellness Nursing	3
NURS 323	Wellness Nursing Clinical	1
NURS 310	Care of Adults I	3
NURS 311	Care of Adults I Clinical	3
NURS 319	Health Assessment	3
		13

NURS 422	Nursing of Childbearing Families	3
NURS 423	Nursing of Childbearing Families Clinical	3
NURS 350	Care of Adults II	3
NURS 351	Care of Adults II Clinical	3
NURS 329	Research Methods	3
		15

YEAR II

NURS 380	Psychiatric Mental Health	3
NURS 381	Psychiatric Mental Health Clinical	3
NURS 430	Community Health	3
NURS 431	Community Health Clinical	3
NURS 442	Nursing Leadership and Management	2
NURS 443	Nursing Leadership and Management Practicum	2
		16

Physics

Chair

Professor Asif Shakur, Ph.D.; *physics, microelectronics*

Professors

Charles Richard McKenzie, Ph.D.; *physics, electronics*

Andrew J. Pica, Ph.D.; *astronomy*

Assistant Professor

Joseph Howard, Ph.D.; *astronomy*

Gail S. Welsh, Ph.D.; *physics, condensed matter*

Lecturer

David Kanarr, M.Ed.; *physical science*

The Physics Department prepares students for a variety of careers in high-technology fields as well as graduate studies in physics or electrical engineering. The department's mission is to prepare students to work confidently and effectively in physics or a related field, to develop the power to think clearly, judge soundly and communicate effectively.

Graduates of the physics program have an expertise in physics, electronics and microcomputers, areas that are an increasingly important part of everyday life. Applications are found in industrial, commercial, medical and governmental environments. There is a growing need for technically oriented personnel in all aspects: research, design, manufacture, sales and service.

Major in Physics

All required physics courses must be completed with a minimum overall GPA of 2.0. All physics majors must complete the following core:

		Credits
CHEM 121	General Chemistry I	4
CHEM 122	General Chemistry II	4
MATH 201	Calculus I	4
MATH 202	Calculus II	4
MATH 310	Calculus III	4
MATH 311	Differential Equations I	4
PHYS 111*	Introduction to Engineering and Physics	3
PHYS 221	Physics I	4
PHYS 223	Physics II	4
PHYS 311	Electrical Circuits and Electronics	4

PHYS 313	Introduction to Modern Physics	3
PHYS 314	Mechanics	3
PHYS 315	Electricity and Magnetism	3
PHYS 316	Introduction to Quantum Mechanics	3

* required only of freshman who declare physics or engineering major

Students can complete the physics major in one of four ways: general physics track, microelectronics track, 3-2 dual degree pre-engineering program or collaborative electrical engineering program. See the department for appropriate checklists and advisement.

General Physics Track

Students pursuing general physics must fulfill the following requirements:

1. Complete the following courses:

	Credits
PHYS 407 Senior Laboratory	3
PHYS 490 Research in Physics	3

2. Satisfy four additional 300/400-level physics courses. See department for approved list of courses.

Microelectronics Track

Physics majors pursuing microelectronics must complete the following courses:

	Credits
PHYS 318 Semiconductor Physics	3
PHYS 321 Analog Electronics	3
PHYS 322 Digital Electronics	4
PHYS 411 Microprocessor Architecture	3
PHYS 412 Microcomputer Interfacing	3
PHYS 475 Research in Microcomputer Physics	3

Pre-Engineering Program

The 3-2 dual-degree pre-engineering program is a cooperative program with the University of Maryland, Old Dominion University and Widener University (see "Dual-Degree Engineering"). An additional 30 hours must be completed at the receiving institution with at least 15 hours in engineering or related courses to receive physics degree from SSU. To receive engineering degree, an additional 30 hours (for a total of 150 hours) must be completed at the receiving institution.

Dual-Degree Engineering Program

Salisbury State University has special agreements with Old Dominion University, Norfolk, VA; the University of Maryland College Park; and Widener University, Chester, PA, to offer a dual-degree program in engineering. Under the program, a student normally attends Salisbury State University for three years and one of the cooperating engineering schools for two years. During the first three years at SSU the student must complete all required General Education courses, all prescribed courses as determined by the particular engineering program and maintain a 3.0 grade point average. Transfer students entering the dual-degree program are required to complete a minimum of 60 semester hours at Salisbury State. Upon successful completion of the five-year program, a student will be awarded a baccalaureate degree from Salisbury State University as well as an appropriate engineering degree from the engineering school attended.

The courses at Salisbury State University which are required for the dual-degree engineering program are described in this catalogue with other programs offered by the Chemistry and Physics departments in the Richard A. Henson School of Science and Technology.

Students in approved dual-degree programs may use credits and grades from the participating institutions as well as Salisbury State University in meeting the requirements for graduating with honors.

Collaborative Electrical Engineering Program

A collaborative electrical engineering program exists between SSU, UMES and the University of Maryland College Park (UMCP). The program requires the completion of 129 total credit hours. The curriculum, based on UMCP's program, includes 43 credit hours of General Education, 16 of which are satisfied by the major. All lower division (freshman and sophomore) courses are taught live at SSU and UMES. Junior and senior level lecture courses are delivered from UMCP to SSU/UMES through an interactive approach or taught live at SSU/UMES. The model for delivery builds on the virtues of Instructional Television (ITV) and Interactive Video Conferencing (IVN), but adds an additional network component to transmit white board and instructional materials through a computer to create a truly two-way interactive classroom. Both SSU and UMES provide lab experiences for students in the program. A microwave engineering lab will most likely be at SSU and a DSP lab is planned for the UMES campus. At the successful completion of the degree requirements, the students in this collaborative engineering program receive a baccalaureate degree in electrical engineering from UMCP's Clark School of Engineering.

Minor in Physics

See "Minors" section for details.

Curriculum Guide: Bachelor of Science in Physics

The following is the suggested sequence of courses taken by microelectronics track physics majors at Salisbury State University. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
PHYS 111	Introduction to Engineering and Physics	1
MATH 201	Calculus I	4
ENGL 101	Composition I	3
CHEM 121	General Chemistry I	4
		12
PHYS 221	Physics I	4
MATH 202	Calculus II	4
ENGL 102	Composition II	3
CHEM 122	General Chemistry II	4
		15
SOPHOMORE YEAR		
PHYS 223	Physics II	4
MATH 310	Calculus III	4
HIST 101	World Civilizations	3
	Group IIB Elective	3
		14
PHYS 311	Electrical Circuits and Electronics	4
PHYS 313	Introduction to Modern Physics	3
MATH 311	Differential Equations I	4
HIST 102	World Civilizations	3
PHEC 106	Personalized Health/Fitness	3
		17
JUNIOR YEAR		
PHYS 314	Mechanics	3
PHYS 322	Digital Electronics	4
PHYS 318	Semiconductor Physics	3
or		
PHYS 315	Electricity and Magnetism	3

ENGL XXX	Literature Elective	3
	Group IIB Elective	3
		16
PHYS 316	Introduction to Quantum Mechanics	3
PHYS 321	Analog Electronics	3
PHYS 411	Microprocessor Architecture	3
	Group IB Elective	3
	Group IIB Elective	3
		15

SENIOR YEAR

PHYS 315	Electricity and Magnetism	3
	or	
PHYS 318	Semiconductor Physics	3
PHYS 412	Microcomputer Interfacing	3
	Group IB Elective	3
	Electives	6
		15
PHYS 475	Research in Microcomputer Physics	3
	Electives	11
		14