

Richard A. Henson

Henson School of Science and Technology

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Majors & Minors

Bachelor of Science

- Biology
 - Dual Degree: Biology and Environmental/Marine Science
- Chemistry
- Computer Science
- Earth Science
- Geography
- Mathematics
- Medical Laboratory Science
- Nursing
- Physics
 - Dual Degree:
 - Physics/Engineering
 - Respiratory Therapy

Minors

- Actuarial Science
- Biology
- Chemistry
- Clinical Biochemistry
- Clinical Hematology
- Clinical Microbiology
- Computer Science
- Earth Science
- Environmental/Land-Use Planning
- Geographic Information Science
- Geography
- Mathematics
- Physics
- Statistics
- Transfusion Services/Blood Bank

Upper-Division Certificate

- Geographic Information Science Fundamentals

Master of Science

- Applied Biology
- Applied Health Physiology
- Geographic Information Systems Management
- Nursing
- Mathematics Education

Doctor of Nursing Practice

- Post-Baccalaureate Certificate in Health Care Management



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School Information

The mission of the Richard A. Henson School of Science and Technology is to provide a state-of-the-art scientific and healthcare-related community where experienced faculty work closely with students in the pursuit of knowledge. In the Henson School, both students and faculty engage in a partnership for learning with a focus on ensuring career success. Within Henson School majors, students develop the knowledge and skills they need to function as professionals within their disciplines and as informed citizens.

The curricula provide sound foundations for health science, nursing, science, 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 coursework, program planning and career development. In addition to 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 secondary education or continue their education in graduate or professional schools.

There are several scholarships for students enrolled in majors in the Henson 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. There are a number of other scholarships available for students majoring in nursing, health sciences and other Henson School majors. More information is available in the "Financial Aid" section of this catalog.

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 for Respiratory Care

Commission on Collegiate Nursing Education (CCNE)

National Accrediting Agency for Clinical Laboratory Sciences

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 the 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 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 Richard A. Henson Foundation made a generous gift to support the recently established Richard A. Henson Foundation Medical Simulation Center at Salisbury University.

HENSON SCHOOL COURSE REPEAT POLICY

Students may repeat courses offered by the Henson School of Science and Technology one time at SU without special permission. This policy applies to all undergraduate courses offered in the Henson School of Science and Technology. Details for the policy are found in Appendix F.

Departments

BIOLOGICAL SCIENCES

www.salisbury.edu/biology

Majors: Biology, Biology/Environmental

Marine Science (dual degree with UMES)

Minors: Biology

Graduate: M.S. Applied Biology

(See "Undergraduate Minors" section for details.)

Chair

Professor Stephen C. Gehrlich, Ph.D.; Tufts University

Associate Chair

Associate Professor Ronald L. Gutberlet, Ph.D.;

University of Texas at Arlington

Professors

Ann M. Barse, Ph.D.; University of Maryland College Park

Christopher H. Briand, Ph.D.; University of Guelph

Mark F. Frana, Ph.D.; University of Kansas

Paul A. Greccay, Ph.D.; University of Delaware

Mark A. Holland, Ph.D.; Rutgers University

Kimberly L. Hunter, Ph.D.; University of Nevada Las Vegas

Ellen M. Lawler, Ph.D.; University of Pennsylvania

Judith M. Stribling, Ph.D.; University of Maryland

E. Eugene Williams, Ph.D.; Arizona State University

Associate Professors

Elizabeth A.B. Emmert, Ph.D.; University of Wisconsin Madison

F. Les Erickson, Ph.D.; University of Texas at Dallas

Samuel Geleta, Ph.D.; Oklahoma State University

Victor A. Miriel, Ph.D.; Old Dominion University

Dana L. Price, Ph.D.; Ph.D., Rutgers University

Ryan C. Taylor, Ph.D.; University of Louisiana-Lafayette

Assistant Professors

Philip D. Anderson, Ph.D.; Case Western Reserve University

Patti T. Erickson, Ph.D.; University of California, Berkeley

Aaron S. Hogue, Ph.D.; Northwestern University

Eric Liebgold, Ph.D.; University of Virginia

Senior Lecturers

Loren Moriarty, M.S.; Texas A&M University

Claudia Morrison-Parker, Ph.D.; Indiana University

Wanda Perkins, M.S.; Salisbury University

Barbara J. Pollock, Ph.D.; Ohio State University

Betty Lou Smith, Ph.D.; University of Maryland College Park

Lecturers

Wanda Jester, M.S.; University of Maryland College Park

Kumudini Munasinghe, Ph.D.; University of Maryland Eastern Shore

Reema Persad-Clem, Ph.D.; Miami University

The Department of Biological Sciences offers degrees in the biological sciences 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. Assist students majoring in biology and associated health disciplines and environmental/marine science prepare for advanced degree work or postgraduate employment.
2. Assist students not majoring in science develop an 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 major includes a required core, which introduces students to the basic concepts of modern biology. The core will allow students to prepare for careers as professional biologists in many prominent subdisciplines. The environmental/marine science dual degree program is an applied program leading to graduate school or employment in these areas. A program leading to secondary teacher education certification is also available.

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).

CHEMISTRY

www.salisbury.edu/chemistry

Major: Chemistry

Minor: Chemistry

(See "Undergraduate Minors" section for details.)

Chair

Associate Professor Anita Brown, Ph.D.; University of Delaware

Associate Chair

Professor David F. Rieck, Ph.D.; University of Wisconsin Madison

Professors

Frederick A. Kundell, Ph.D.; University of Maryland College Park

Edward G. Senkbeil, Ph.D.; University of Delaware

Associate Professors

Seth Friese, Ph.D.; University of California, San Diego

Stephen A. Habay, Ph.D.; University of Pittsburgh

Katherine Miller, Ph.D.; Washington University

Assistant Professors

Alison Dewald, Ph.D.; The University of Virginia

Robert D. Luttrell, Ph.D.; University of Tennessee

Senior Lecturers

Mindy Howard, B.S.; University of Oklahoma at Norman

Orville LaCurtis, M.Ed.; Salisbury University

Lecturer

Brent Alogna, B.S.; Salisbury University

Cynthia Watson, M.Ed.; Salisbury University

The Chemistry Department offers different tracks leading to the Bachelor of Science in chemistry, including two American Chemical Society (ACS)-certified programs and a program leading to secondary education teacher certification.

The department's curricula foster the development and expression (verbal and written) 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.

GEOGRAPHY AND GEOSCIENCES

www.salisbury.edu/geography

Majors: Earth Science, Geography

Minors: Earth Science, Environmental Land-Use Planning, Geographic Information Sciences, Geography

(See "Undergraduate Minors" section for details.)

Upper-Division Certificate: Geographic Information Science Fundamentals

Graduate: M.S. GIS Management

Chair

Professor Brent R. Skeeter, Ph.D.; University of Nebraska-Lincoln

Associate Chair

Professor Xingzhi Mara Chen, Ph.D.; University of Iowa

Professors

Michael E. Folkoff, Ph.D.; University of Georgia

Michael S. Scott, Ph.D.; University of South Carolina

Associate Professors

Amal K. Ali, Ph.D.; Florida State University

Gina Bloodworth, Ph.D.; Pennsylvania State University

Mark de Socio, Ph.D.; University of Cincinnati

Arthur Lembo, Ph.D., State University of New York College of Environmental Science and Forestry

Darren B. Parnell, Ph.D.; University of South Carolina

Brent J. Zaprowski, Ph.D.; Lehigh University

Assistant Professors

Thomas Cawthern, M.S.; University of West Virginia

Daniel W. Harris, Ph.D.; University of Maryland College Park

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 the physical sciences, social sciences and spatial data management techniques. The department also offers a Bachelor of Science in earth science. Additionally, the department offers a graduate program in Geographic Information Systems (GIS) Management that focuses on the management and administration of geospatial data in a public context.

HEALTH SCIENCES

www.salisbury.edu/healthsci

Majors: Medical Laboratory Science, Respiratory Therapy

Minors: Clinical Biochemistry, Clinical Hematology, Clinical Microbiology, Transfusion Services/ Blood Bank

Graduate: M.S. Applied Health Physiology

Chair

Professor Sidney Schneider, Ph.D., RRT-NPS, RPFT, ACSM-CES

(Applied Health Physiology Program Director);

University of Maryland College Park

Professors

Diane L. Davis, Ph.D., MLS(ASCP)^{CM} SLS^{CM} SC^{CM}

(Medical Laboratory Science Program Director and Clinical

Coordinator); The Catholic University of America

Robert L. Joyner, Ph.D., RRT, FAARC (Respiratory Therapy Program Director); Dartmouth College

Associate Professor

Catherine Otto, Ph.D., MLS(ASCP)^{CM}, SH^{CM}; Northeastern University

Assistant Professors

Carlton R. Insley III, Ph.D., RRT-NPS, RPFT; University of Nevada - Las Vegas

Thomas K. Pellinger, Ph.D.; University of Oregon

Clinical Assistant Professors

Adriana Guerra, M.P.H., RRT; Texas A&M School of Rural Public Health (Program Coordinator, Respiratory Therapy Program at The Universities at Shady Grove)

Lisa Joyner, M.Ed., RRT-NPS (Director of Clinical Education, Respiratory Therapy Program); Salisbury University

Sangeeta S. Mathur, M.Ed., RRT (Clinical Assistant Professor of Health Sciences at The Universities at Shady Grove); Strayer University

Medical Directors

C. Rodney Layton Jr., M.D. (Consulting Faculty, Respiratory Therapy); Thomas Jefferson University, University of Pennsylvania School of Medicine

William J. Nagel, M.D. (Consulting Faculty, Respiratory Therapy); Creighton University School of Medicine

Sanjay K. Vanguri, M.D.; Cornell University Weill Medical College

Eric Weaver, M.D., Ph.D. (Consulting Faculty, Medical Laboratory Science); Thomas Jefferson University, Jefferson Medical College

Instructor

Christine Camillo, M.S., MLS(ASCP)^{CM}; University of Maryland at Baltimore

The Department of Health Sciences consists of undergraduate programs in medical laboratory science and respiratory therapy, and a graduate program in applied health physiology.

The undergraduate programs provide coursework in the basic sciences, General Education and specialized areas that prepare graduates for national certification in their fields of study. 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.

The graduate program in applied health physiology is a professional degree program designed to prepare health care professionals. Graduates of this program should possess the vision, the knowledge and the skills necessary to promote health and wellness in strength and conditioning careers as well as a variety of clinical settings (e.g., cardiac/pulmonary rehabilitation, geriatric centers, youth centers, state and local health departments, and corporate wellness programs). The curriculum emphasizes both theory and practice in the preparation of administrators, technicians and supervisors. The program is designed to include the knowledge, skills and opportunities for practice that are essential for the development of health care and strength fitness professionals.

Undergraduate Program in Medical Laboratory Science

The Department of Health Sciences offers a program leading to the Bachelor of Science in medical laboratory science, 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 medical laboratory science 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.

SU’s program provides courses in the basic sciences of chemistry and biology, General Education and specialized areas such as microbiology, immunology, clinical biochemistry, hematology, transfusion services and management. Computerization, mathematics, instrumentation and writing are integrated into the curriculum. The diverse courses are coupled with opportunities 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 for Clinical Pathology (ASCP).

Undergraduate Program in Respiratory Therapy

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. Program admission is competitive and it is highly recommended that students wishing to pursue the degree seek academic advisement early.

The professional coursework in the respiratory therapy program provides extensive exposure to many therapeutic modalities including, but not limited to, oxygen therapy, small volume nebulizer therapy, chest physical therapy, intermittent positive pressure breathing, mechanical ventilation, intubation, blood gas acquisition and analysis, neonatal intensive care, monitoring heart and lung functions of critically ill patients, cardiopulmonary resuscitation, and numerous rotations (e.g., pulmonary function laboratory, cardiopulmonary rehab, etc.). The clinical rotations of the respiratory therapy program are divided among the student’s junior and senior clinicals. The junior year is spent providing care to patients on the general floors and the senior year is spent providing care entirely in intensive care and the emergency department. This provides graduates the best exposure to a wide variety of patient diseases and severity of diseases. Graduates are offered certifications in CPR, Neonatal resuscitation, Pediatric Advanced Life Support and Advanced Cardiovascular Life Support

The Bachelor of Science program is accredited by the Committee on the Accreditation of Respiratory Care programs (CoARC). Graduates are eligible to take credentialing examinations offered by the National Board of Respiratory Care (NBRC).

Graduate Program in Applied Health Physiology

The Department of Health Sciences offers a program leading to the Master of Science in applied health physiology. This professional degree program is designed to prepare leaders in the fields of health care/wellness or fitness. The program offers three possible areas of focus: cardiovascular/pulmonary rehabilitation, strength and conditioning, and fitness/wellness. The program provides academic preparation for students seeking certification by the American College of Sports Medicine as exercise specialists or by the National Strength and Conditioning Association as certified strength and

conditioning specialists (CSCS). The academic coursework prepares students for careers in health care settings such as hospitals, youth and geriatric centers, state and local health departments, corporate wellness programs, personal trainers, and strength and conditioning coaches for sports teams. The academic and clinical faculty members provide multiple opportunities for hands-on experience in addition to traditional classroom interactions.

MATHEMATICS AND COMPUTER SCIENCE

www.salisbury.edu/mathcsc

Majors: Computer Science, Mathematics

Minors: Actuarial Science, Computer Science,

Mathematics, Statistics

(See “Undergraduate Minors” section for details.)

Post-Baccalaureate Certificate:

Middle School Mathematics

Graduate: M.S. Mathematics Education

Chair

Professor Michael J. Bardzell, Ph.D.; Virginia Polytechnic Institute and State University

Associate Chair

Professor Donald E. Spickler Jr., Ph.D.; University of Virginia

Professors

Homer W. Austin, Ph.D.; University of Virginia

Steven M. Hetzler, Ph.D.; Northwestern University

E. Lee May Jr., Ph.D.; Emory University

Mohammad Moazzam, Ph.D.; The Catholic University of America

David L. Parker, Ph.D.; Indiana University

Kathleen M. Shannon, Ph.D.; Brown University

Robert M. Tardiff, Ph.D.; University of Massachusetts

Barbara A. Wainwright, Ph.D.; University of Delaware

Xiaohong Sophie Wang, Ph.D.; University of Victoria (Canada)

Associate Professors

Troy V. Banks, Ph.D., University of Texas at Dallas

Jennifer A. Bergner, Ph.D.; University of Northern Colorado

Dean DeFino, M.S.; University of Tennessee

Enyue Lu, Ph.D.; University of Texas at Dallas

Kurt E. Ludwick, Ph.D.; Temple University

Sang-Eon Park, Ph.D.; University of Cincinnati

Assistant Professors

Jathan W. Austin, Ph.D.; University of Delaware

Lori Carmack, Ph.D.; University of California, Santa Barbara

Veera Holdai, Ph.D., Wayne State University

Melissa Stoner, Ph.D.; Lehigh University

Professor of Practice

Michael Gauger, Ph.D.; Notre Dame University

Visiting Assistant Professors

Mary Beth Flagg, M.Ed.; Wilmington College

Gerard Keough, Ph.D.; Indiana University

Steven T. Lauterburg, Ph.D.; University of Illinois at Urbana-Champaign

Senior Lecturers

Robert Barber, M.S.; American University

Robert Johnson, Ed.D.; Indiana University

Bohdan G. Kunciw, Ph.D.; The Pennsylvania State University

Carvel LaCurtis, M.Ed.; Salisbury University

Lecturer

Theresa Manns, M.S.; Syracuse University

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. Also available are a track in actuarial science and a program leading to secondary education teacher certification. 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, internships 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. The department provides up-to-date programs as well as undergraduate research, internships and consulting opportunities.

NURSING

www.salisbury.edu/nursing

Major: B.S. Nursing

Post-Baccalaureate Certificate:

Health Care Management

Graduate: M.S. Nursing,

Doctor of Nursing Practice

Chair

Professor Lisa A. Seldomridge, Ph.D.; University of Maryland College Park

Associate Chair

Associate Professor Debra Webster, Ed.D.; Wilmington College

Professors

Mary DiBartolo, Ph.D.; University of Maryland at Baltimore

Dorothea McDowell, Ph.D.; University of Maryland at Baltimore

Associate Professors

Voncelia S. Brown, M.S., Ph.D.; University of Maryland College Park

William T. Campbell, Ed.D.; University of Delaware

Judith M. Jarosinski, Ph.D.; Virginia Commonwealth University

Mary T. Parsons, Ed.D., CFNP; University of Delaware

(Director of Graduate and Second-Degree Programs)

Tina Brown Reid, Ed.D.; Wilmington College

Assistant Professors

Michele I. Bracken, Ph.D.; University of Maryland at Baltimore

Katherine A. Hinderer, Ph.D.; University of Maryland at Baltimore

Rita Nutt, D.N.P.; University of Maryland at Baltimore

Laurie Rockelli, Ph.D.; University of Maryland at Baltimore

Professors of Practice

Karen K. Badros, Ed.D., CRNP; University of Maryland College Park

Catherine M. Walsh, Ph.D.; University of Maryland College Park

Instructors

Kimberly D. Allen, M.S.N.; Johns Hopkins University

Erica A. Alessandrini, M.S.N.; Wilmington College

Kaynabess Freda, M.S.; Salisbury University

Nancy M. Smith, M.S.N., FNP-BC; Wilmington University

Jeffrey A. Willey, M.S.N.; University of Delaware

The Department of Nursing offers programs leading to a bachelor's or a master's degree in nursing and the Doctorate in Nursing Practice (D.N.P.). The faculty of the Department of Nursing at SU actively engage undergraduate and graduate students in the development of the knowledge, skills and values integral to excellence in professional nursing practice.

The bachelor's and master's degree programs are accredited by the Commission on Collegiate Nursing Education (CCNE) and the Maryland Board of Nursing. The department will pursue full accreditation of the newly established D.N.P. in a timely fashion.

PHYSICS

www.salisbury.edu/physics

Major: Physics

Minor: Physics

(See "Undergraduate Minors" section for details.)

Chair

Professor Andrew J. Pica, Ph.D.; University of Florida

Professor

Asif Shakur, Ph.D.; University of Calgary

Associate Professors

Joseph Howard, Ph.D.; University of Oklahoma at Norman

Gail S. Welsh, Ph.D.; The Pennsylvania State University

Assistant Professor

Matthew Bailey, Ph.D.; Utah State University

Jeffrey Emmert, Ph.D.; University of Virginia

Mark W. Muller, Ph.D.; University of Hawaii

Senior Lecturer

David Kanarr, M.Ed.; Salisbury University

Lecturer

Gerardo Vazquez, Ph.D.; Universidad Nacional Autonoma De Mexico

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

Graduates of the physics program have 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.

Undergraduate Majors

BIOLOGY

Department of Biological Sciences

www.salisbury.edu/biology

Dr. Stephen C. Gehrlich, Chair

410-543-6490

To graduate with a degree in biology, students must complete the 27-credit biology core and at least 17 additional credits in BIOL and ENVH (totaling at least 44 credits), with an overall GPA of 2.0 or higher. At least 24 of these 44 credits must be at the 300-400 level. Approved courses include BIOL 115 and biology courses at the 200, 300 and 400 levels (except BIOL 205, 214, 217, 219, 220, 416, 419 and 450). Approved courses also include ENVH 210, 301 and 302.

Biology Core

Complete the following biology core:

	Credits
BIOL 210* Biology: Concepts and Methods.....	4
Three of the following:	
BIOL 211* Microbiology	4
BIOL 212* Introduction to Plant Biology.....	4
BIOL 213* Zoology	4
BIOL 310* Ecology	4

All of the following:	
BIOL 350 Cell Biology.....	4
BIOL 360 Genetic Analysis	4
or	
BIOL 370 Molecular Biology	4
BIOL 375 Introduction to Evolution.....	3

* A C or better is required in these courses before taking any courses for which they are a prerequisite. In order to earn a degree in biology, students must earn a C or better in at least three of the following: BIOL 211, 212, 213 or 310.

Additional Requirements

1. Complete the following three chemistry courses:

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

2. Complete one of the following mathematics courses:

	Credits
MATH 155 Modern Statistics	3
MATH 198 Calculus for Biology and Medicine	4
MATH 201 Calculus I	4

3. Complete one of the following physical science courses:

	Credits
GEOG 105 Introduction to Physical Geography	4
GEOG 401 Soil, Water and Environment	3
GEOG 103 Introduction to Physical Geology	4
PHYS 121 General Physics I	4
PHYS 221 Physics I	4

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 417 Biochemistry	4

- Complete additional BIOL and ENVH courses to meet the minimum of 44 credits for the major.

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 205 Fundamentals of Human Anatomy and Physiology	4
BIOL 110 Human Biology	4
BIOL 214 Medical Physiology.....	3
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.....	1-3

Health Professions Students

Pre-professional students select their courses according to the admission requirements 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 Professions Advising Program (HPAP). 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 catalog for more information.

Teacher Certification

Students seeking certification to teach biology in secondary schools must meet all major requirements, BIOL 310 Ecology, and the following specific and additional requirements in related sciences.

Students majoring in biology, secondary education track, should obtain the program curriculum guide and seek advisement from the biological science education specialist in the Department of Educational Specialties.

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

► Pre-professional Requirements

- Complete the following pre-professional requirements with grades of C or better.

	Credits
EDUC 210 School in a Diverse Society	3
ENGL 103 Composition and Research	4
SCED 300 Development, Learning and Assessment.....	3

- Show satisfactory results on Praxis I, SAT or ACT examinations as defined by the Maryland State Department of Education. See education advisor regarding passing scores.

► Professional Program

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

- Complete an application for formal admission to the professional program. Obtain written approval of the application from both content and education advisors.
- Complete a minimum of 56 college credits with a minimum of 2.50 GPA, including transfer credits.

- Have a cumulative minimum GPA of 2.75 in the major, including transfer credits.
- Complete all pre-professional requirements.
- Complete four courses in the major field.

► Methods Requirements

- To be eligible for internship, all students enrolled in a secondary or K-12 program must complete the appropriate methods courses for the content major and the following courses in education with grades of C or better:

	Credits
SCED 318 Computers in Education.....	3
or SCED 319 Technology in Education	1
SCED 367 Inclusive Instruction for Secondary Teachers.....	3
SCED 434 Classroom Management	3
SCED 374 Science and Reading Methods in the Middle and High School Part I	4
SCED 474 Science and Reading Methods in the Middle and High School Part II	4

- The Maryland State Board of Education mandates all secondary/K-12 pre-and in-service teachers have six hours coursework in reading. Secondary education majors who complete the secondary education program will have satisfied the six hours course work in reading by program integration.

► Internship and Seminar

Student interns will be assigned to a Professional Development School (PDS) for their internship experience. This internship will consist of a minimum of 100 days. In order to meet the 100-day requirement, interns are required to follow the calendar of the school district in which the PDS is located. Interns are responsible for their own transportation to the PDS site.

Candidates must meet the following requirements for internship:

- Complete the written application for internship.
- Complete a minimum of 90 credits including methods and at least eight courses of the academic major (secondary and K-12 programs).
- Have an overall grade point average of at least 2.50 including transfer credit.
- Have a minimum grade point average of at least 2.75 in the academic major courses, including transfer credits, as defined by each academic department.
- Have a minimum average of 2.75 in professional education courses with no grade below C. Students may repeat education courses only once.
- Obtain verification of completion of these requirements from the director of field experiences.

All secondary education majors are required to pass the following:

	Credits
SCED 426 Internship in Middle or High School Education	6
SCED 428 Internship in Middle or High School Education	6
SCED 433* Reflection and Inquiry in Teaching Practice	2

* Students are required to follow the University calendar with respect to attendance in SCED 433.

► Graduation Requirement

State of Maryland passing scores on appropriate Praxis II exams are required for completion of secondary education certification and graduation. See education advisor regarding appropriate tests and passing scores.

Dual Degree Program in Biology And Environmental/Marine Science

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

These students pursue their biology major at SU, completing all biology core requirements (including BIOL 213) as well as the following:

1. Students in this program take a minimum of 23 semester credit hours on the UMES campus. Students shall not begin coursework at UMES until they have completed BIOL 210, BIOL 212, CHEM 121 and CHEM 122 with a C or better in all four courses. They complete registration for UMES courses by submitting an interinstitutional enrollment form available from their advisor or the Registrar's Office. As part of the 17 hours of biology elective requirements, students must take the following courses:

	Credits
BIOL 201* Marine Zoology.....	4
BIOL 202(lec)/203(lab)* Marine Botany	4
BIOL 310 Ecology	4
BIOL 401 Wetland Ecology.....	4
BIOL 410 Estuarine Biology	3

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

	Credits
ENVS 202(lec)/204(lab)* Oceanography	4
ENVS 221(lec)/222(lab)* Principles of Environmental Science	4
ENVS 403(lec)/405(lab)* Marine Exotoxicology	4
ENVS 460* Earth Science	3
GEOG 104 Earth and Space Science.....	4
or	
GEOG 105 Introduction to Physical Geography	4
or	
GEOG 219 Map Analysis and Interpretation	4
PHYS 121 General Physics I	4
PHYS 123 General Physics II	4
MATH 155 Modern Statistics with Computer Analysis	3
MATH 198 Calculus for Biology and Medicine	4
or	
MATH 201 Calculus I	4
MATH 202 Calculus II.....	4
or	
XXX XXX ** Environmental Elective	3

* offered at UMES only; C or better required
 ** select one from GEOG 311, 316, 319, 321, 325, 401, 402; GEOL 405; BIOL 433.

NOTE: Because several courses are offered only in spring or fall, and because of other requirements of the program, it is important that students check their program plans carefully with their advisors.

See the "Graduate Programs" section of this chapter for a complete description of the M.S. in applied biology.

General Information

► Transfer Students

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

Curriculum Guide: Bachelor of Science In Biology

Information regarding course requirements and year-by-year sequence are available upon request from the Biological Sciences Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

CHEMISTRY

Department of Chemistry
www.salisbury.edu/chemistry

Dr. Anita Brown, Chair
 410-543-6480

The Chemistry Department offers a broad selection of tracks 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 the math and science courses required by the major. Transfer students majoring in chemistry are required to complete at least 15 hours in chemistry at Salisbury University. With the proper selection of electives, a chemistry major can be used for entry into the professional programs of dentistry, medicine, veterinary medicine, pharmacy or patent law (see "Pre-professional Programs" section).

All chemistry majors must complete the following core courses. In addition, each major must satisfy the additional requirements for the chosen track as outlined below.

Chemistry Core Courses

	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
MATH 201 Calculus I*	4
MATH 202 Calculus II.....	4
PHYS 221 Physics I **	4
PHYS 223 Physics II ***	4

* Students in the pre-health professional track (described below) may take MATH 198 or MATH 201.

** Students in the accelerated professional - pharmacy track and the pre-health professional track (described below) may take PHYS 121 or PHYS 221

*** Students in the accelerated professional - pharmacy track and the pre-health professional track (described below) may take PHYS 123 or PHYS 223

In addition to completing these core courses, students must complete their major in one of the following tracks: traditional chemistry track, ACS chemistry track, biochemistry

track, ACS biochemistry track, teacher certification track, pre-engineering track, pre-health professional track or accelerated professional - pharmacy track.

Traditional Chemistry Track

This is a baccalaureate track designed for direct entry into the chemistry profession.

	Credits
CHEM 207 Laboratory Safety	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I.....	4
CHEM 342 Physical Chemistry II	4
CHEM 403 Principles of Chemical Research	3
or	
CHEM 413 Internship/Co-op in Chemistry	3
CHEM 441 Advanced Experimental Chemistry I	4
CHEM 442 Advanced Experimental Chemistry II	4
BIOL 210 Biology: Concepts and Methods.....	4

American Chemical Society Chemistry Track

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

	Credits
CHEM 207 Laboratory Safety	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I.....	4
CHEM 342 Physical Chemistry II	4
CHEM 403 Principles of Chemical Research	3
CHEM 410 Chemical Research	3
CHEM 417 Biochemistry I.....	4
CHEM 441 Advanced Experimental Chemistry I	4
CHEM 442 Advanced Experimental Chemistry II	4
BIOL 210 Biological Concepts and Methods	4

Biochemistry Track

The biochemistry track is designed for students interested in developing a deeper understanding of biochemical principles and engaging in more advanced biochemistry laboratory experiences. This track provides a diversified background for postgraduate health-related programs, such as dentistry, medicine or veterinary medicine (see "Pre-professional Programs" section). When coordinated properly, completion of this track satisfies the requirements of most medical schools.

	Credits
CHEM 207 Laboratory Safety	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I.....	4
or	
CHEM 342 Physical Chemistry II	4
CHEM 403 Principles of Chemical Research	3
or	
CHEM 413 Internship/Co-op in Chemistry	3
CHEM 417 Biochemistry I.....	4
CHEM 418 Biochemistry II	3
CHEM 419 Biochemical Methods	4
CHEM 441 Advanced Experimental Chemistry I	4
BIOL 210 Biology: Concepts and Methods.....	4
BIOL 211 Microbiology	4
or	
BIOL 212 Introduction to Plant Biology.....	4
or	
BIOL 213 Zoology.....	4
BIOL 350 Cell Biology.....	4
or	
BIOL 370 Molecular Genetics.....	4
BIOL 3XX Biology Elective	3/4
or	
BIOL 4XX Biology Elective	3/4

American Chemical Society Biochemistry Track

The ACS-certified chemistry degree/biochemistry track is designed for highly motivated chemistry majors seeking a curriculum emphasizing biochemistry. This option is well suited for students who intend to enter graduate programs in biochemistry or closely related fields. When coordinated properly, completion of this track satisfies the requirements of most medical schools.

	Credits
CHEM 207 Laboratory Safety	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I.....	4
CHEM 342 Physical Chemistry II	4
CHEM 403 Principles of Chemical Research	3
CHEM 410 Chemical Research	3
CHEM 417 Biochemistry I.....	4
CHEM 418 Biochemistry II	3
CHEM 419 Biochemical Methods	4
CHEM 441 Advanced Experimental Chemistry I	4
BIOL 210 Biology: Concepts and Methods.....	4
BIOL 211 Microbiology	4
or	
BIOL 212 Introduction to Plant Biology.....	4
or	
BIOL 213 Zoology.....	4
BIOL 350 Cell Biology.....	4
BIOL 370 Molecular Genetics.....	4

Teacher Certification

The teacher certification track is a Maryland State Department of Education-approved teacher education program, which certifies students to teach chemistry in the secondary schools.

	Credits
CHEM 107 Chemistry: A Humanistic Perspective.....	4
or	
CHEM 109 Energy and the Environment	4
CHEM 207 Laboratory Safety	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 341 Physical Chemistry I.....	4
CHEM 342 Physical Chemistry II	4
CHEM 417 Biochemistry I.....	4
BIOL 101 Fundamentals of Biology	4

► Pre-professional Requirements

1. Complete the following pre-professional requirements with grades of C or better.

	Credits
EDUC 210 School in a Diverse Society	3
ENGL 103 Composition and Research	4
SCED 300 Development, Learning and Assessment.....	3

2. Show satisfactory results on Praxis I, SAT or ACT examinations as defined by the Maryland State Department of Education. See education advisor regarding passing scores.

► Professional Program

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

1. Complete an application for formal admission to the professional program. Obtain written approval of the application from both content and education advisors.
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 the major, including transfer credits.

4. Complete all pre-professional requirements.
5. Complete four courses in the major field.

► Methods Requirements

1. To be eligible for internship, all students enrolled in a secondary or K-12 program must complete the appropriate methods courses for the content major and the following courses in education with grades of C or better:

	Credits
SCED 318 Computers in Education	3
or	
SCED 319 Technology in Education	1
SCED 367 Inclusive Instruction for Secondary Teachers.....	3
SCED 434 Classroom Management	3
SCED 374 Science and Reading Methods in the Middle and High School Part I	4
SCED 474 Science and Reading Methods in the Middle and High School Part II	4

2. The Maryland State Board of Education mandates all secondary/K-12 pre-and in-service teachers have six hours coursework in reading. Secondary education majors who complete the secondary education program will have satisfied the six hours course work in reading by program integration.

► Internship and Seminar

Student interns will be assigned to a Professional Development School (PDS) for their internship experience. This internship will consist of a minimum of 100 days. In order to meet the 100-day requirement, interns are required to follow the calendar of the school district in which the PDS is located. Interns are responsible for their own transportation to the PDS site.

Candidates must meet the following requirements for internship:

1. Complete the written application for internship.
2. Complete a minimum of 90 credits including methods and at least eight courses of the academic major (secondary and K-12 programs).
3. Have an overall grade point average of at least 2.50 including transfer credit.
4. Have a minimum grade point average of at least 2.75 in the academic major courses, including transfer credits, as defined by each academic department.
5. Have a minimum average of 2.75 in professional education courses with no grade below C. Students may repeat education courses only once.
6. Obtain verification of completion of these requirements from the director of field experiences.

All secondary education majors are required to pass the following:

	Credits
SCED 426 Internship in Middle or High School Education	6
SCED 428 Internship in Middle or High School Education	6
SCED 433* Reflection and Inquiry in Teaching Practice	2
(with a grade of C or better)	

* Students are required to follow the University calendar with respect to attendance in SCED 433.

► Graduation Requirement

State of Maryland passing scores on appropriate Praxis II exams are required for completion of secondary education certification and graduation. See education advisor regarding appropriate tests and passing scores.

Pre-Engineering Track

The pre-engineering track is a 3-2 dual-degree program in cooperation with the University of Maryland and Widener University (see Dual-Degree Engineering Majors).

	Credits
CHEM 341 Physical Chemistry I	4
CHEM 342 Physical Chemistry II	4
ENGR 100 Introduction to Engineering Design	3
ENGR 110 Statics	3
MATH 310 Calculus III	4
MATH 311 Differential Equations I	4
PHYS 225 Physics III	3

Prior to entering the engineering program at the receiving institution, students must complete all SU General Education and other graduation requirements. In addition, students must complete at least 30 hours of course work at the receiving institution.

Pre-Health Professional Track

The pre-health professional track is designed for students interested in pursuing postgraduate professional school programs (medicine, dentistry, veterinary medicine, pharmacy, optometry and podiatric medicine). With the advice of the health professions advisors of the Henson School of Science and Technology Health Professions Advising Program (HPAP), these students select their courses according to the admission demands of the professional schools in their areas of interest while also completing the requirements for a B.S. in chemistry. See the "Pre-professional Programs" section of this catalog for more information.

In addition to the chemistry core courses, students are required to complete the following courses

	Credits
CHEM 207 Laboratory Safety	1
or	
MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory.....	1
CHEM 306 Fundamentals of Inorganic Chemistry	4
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I	4
or	
CHEM 342 Physical Chemistry II	4
CHEM 403 Principles of Chemical Research	3
or	
CHEM 413 Internship/Co-Op in Chemistry	3
CHEM 417 Biochemistry	4
CHEM 418 Biochemistry II	3
CHEM 419 Biochemical Methods	4
CHEM 441 Advanced Experimental Chemistry I	4
BIOL 210 Biology: Concepts and Methods.....	4
BIOL 213 Zoology	4
BIOL 350 Cell Biology.....	4
BIOL 370 Molecular Genetics.....	4
CMAT 100 Fundamentals of Communication.....	4
PSYC 101 General Psychology	4
SOCI 101 Introduction to Sociology	4

Accelerated Professional Track - Pharmacy

In this accelerated track a student completes three years of study at SU and then, if accepted, the student may enter the University of Maryland School of Pharmacy during what would have been the fourth year of study at SU. While at SU, students complete the chemistry core courses identified here as well as the additional requirements that follow. Students must also complete all SU General Education requirements prior to entering pharmacy school. Please note, the completion of SU requirements does not guarantee admission into pharmacy school; additionally, it is the student's responsibility to make sure all pharmacy school prerequisites are met. After successful completion of the first year of study at pharmacy

school, and if all other SU requirements have been met, students receive the baccalaureate degree in chemistry from SU. See the "Pre-Professional Programs" section of this catalog for more information

The SU requirements for this accelerated track (in addition to completion of the chemistry core and General Education requirements) are outlined here:

	Credits
CHEM 207 Laboratory Safety	1
or	
MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory.....	1
CHEM 333 Instrumental Analysis	3
CHEM 341 Physical Chemistry I.....	4
or	
CHEM 342 Physical Chemistry II	4
CHEM 417 Biochemistry	4
MATH 155 Modern Statistics with Computer Analysis	3
or	
MATH 213 Statistical Thinking	3
BIOL 210 Biology: Concepts and Methods.....	4
BIOL 211 Microbiology	4
BIOL 215 Human Anatomy and Physiology I	4
BIOL 216 Human Anatomy and Physiology II	4
CMAT 100 Fundamentals of Communication.....	4
ECON 211 Micro-Economic Principles	3

Curriculum Guide: Bachelor of Science in Chemistry

Information regarding course requirements and year-by-year sequence are available upon request from the Chemistry Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

COMPUTER SCIENCE

Department of Mathematics and Computer Science
www.salisbury.edu/mathcosc

Dean DeFino, Program Director
410-543-6145

The computer science major requires 18-20 courses (64-69 credits) arranged in four components:

- I. Mathematics Core for computer science (16-20 credits);
- II. Lower-Division Computer Science Core (16 credits);
- III. Upper-Division Computer Science Core (23 credits); and
- IV. Three upper-level electives (9-10 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 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	4
MATH 293 Linear and Statistical Methods for Computer Science.....	4
or	
MATH 213 Statistical Thinking	3
and	
MATH 214 Statistics Laboratory.....	1
and	
MATH 306 Linear Algebra	4

II. Lower-Division Computer Science Core

	Credits
COSC 117 Programming Fundamentals	4
COSC 120 Computer Science I	4
COSC 220 Computer Science II.....	4
COSC 250 Microcomputer Organization	4

III. Upper-Division Computer Science Core

	Credits
COSC 320 Advanced Data Structures and Algorithm Analysis	4
COSC 350 Systems Software.....	4
COSC 362 Theory of Computation	3
COSC 386 Database Implementation.....	3
COSC 425 Software Engineering I.....	3
COSC 426 Software Engineering II	3
COSC 450 Operating Systems	3

IV. Three Upper-level Electives

Choose three courses from the following:

	Credits
COSC 330 OO Design Patterns and GUI/ Event-Driven Programming	3
COSC 370 Computer Networks	3
COSC 380 Internship*	3
COSC 390 Undergraduate Research Project*	3
COSC 422 Organization of Programming Languages	3
COSC 432 Compiler Construction	3
COSC 456 Computer Architecture	3
COSC 472 Network Security	3
COSC 482 Computer Graphics	3
COSC 490 Special Topics.....	3
COSC 495 Directed Consulting*.....	4
MATH 471 Numerical Methods**	3

or other COSC, INFO, 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

Information regarding course requirements and year-by-year sequence are available upon request from the Mathematics and Computer Science Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

EARTH SCIENCE

Department of Geography and Geosciences
www.salisbury.edu/geography

Dr. Brent Skeeter, Chair
 410-543-6460

All courses applied to the major must be completed with grades of C or better. Except for GEOG 204, 219, 319, 414 and GEOL 206 the core courses may be taken in any order and a student may register for more than one in a given semester. The Department of Geography and Geosciences recommends that the lower-division core courses (GEOG 201, 204, 219 and GEOL 103) be completed prior to GEOG 414.

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

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

1. Complete the following core courses:

	Credits
GEOG 201 Weather and Climate	4
GEOG 204 Spatial Analysis	4
GEOG 219 Map Interpretation and Analysis	3
GEOG 311 Coastal Processes	3
GEOG 319 Geographic Information Science	4
GEOG 414 Research and Writing	3
GEOL 103 Introduction to Physical Geology	4
GEOL 206 Historical Geology	4
GEOL 211 Sediment Analysis	1
CHEM 121 General Chemistry I	4
MATH 155 Modern Statistics with Computer Analysis	3
COSC 117 Programming Fundamentals	4
or	
COSC 118 Introductory Scientific Programming	4

2. Complete at least two courses from the following

	Credits
GEOG 312 Severe and Hazardous Weather	3
or	
GEOG 413 Applied Climatology	3
GEOG 401 Soil, Water and Environment	3
GEOG 411 Geomorphology	3
GEOL 405 Environmental Geology	3

Teacher Certification

Students seeking licensure to teach earth science in secondary schools must complete the following science and education requirements beyond the earth science core. Students may repeat each education course only once.

► Additional Science Requirements

	Credits
GEOG 141 Current Issues in Earth Science.....	3
PHYS 108 Introduction to Observational Astronomy	4
PHYS 121 General Physics I	4
BIOL 101 Biology: Concepts and Methods.....	4
BIOL 115/	
MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory	1

► Pre-professional Requirements

1. Complete the following pre-professional requirements with grades of C or better.

	Credits
EDUC 210 School in a Diverse Society	3
ENGL 103 Composition and Research	4
SCED 300 Development, Learning and Assessment.....	3

2. Show satisfactory results on Praxis I, SAT or ACT examinations as defined by the Maryland State Department of Education. See education advisor regarding passing scores.

► Professional Program

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

1. Complete an application for formal admission to the professional program. Obtain written approval of the application from both content and education advisors.
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 the major, including transfer credits.
4. Complete all pre-professional requirements.
5. Complete four courses in the major field.

► Methods Requirements

1. To be eligible for internship, all students enrolled in a secondary or K-12 program must complete the appropriate methods courses for the content major and the following courses in education with grades of C or better:

	Credits
SCED 318 Computers in Education.....	3
or	
SCED 319 Technology in Education	1
SCED 367 Inclusive Instruction for Secondary Teachers.....	3
SCED 434 Classroom Management	3
SCED 374 Science and Reading Methods in the Middle and High School Part I	4
SCED 474 Science and Reading Methods in the Middle and High School Part II	4

2. The Maryland State Board of Education mandates all secondary/K-12 pre-and in-service teachers have six hours coursework in reading. Secondary education majors who complete the secondary education program will have satisfied the six hours course work in reading by program integration.

► Internship and Seminar

Student interns will be assigned to a Professional Development School (PDS) for their internship experience. This internship will consist of a minimum of 100 days. In order to meet the 100-day requirement, interns are required to follow the calendar of the school district in which the PDS is located. Interns are responsible for their own transportation to the PDS site.

Candidates must meet the following requirements for internship:

1. Complete the written application for internship.
2. Complete a minimum of 90 credits including methods and at least eight courses of the academic major (secondary and K-12 programs).
3. Have an overall grade point average of at least 2.50 including transfer credit.

4. Have a minimum grade point average of at least 2.75 in the academic major courses, including transfer credits, as defined by each academic department.
5. Have a minimum average of 2.75 in professional education courses with no grade below C. Students may repeat education courses only once.
6. Obtain verification of completion of these requirements from the director of field experiences.

All secondary education majors are required to pass the following:

	Credits
SCED 426 Internship in Middle or High School Education	6
SCED 428 Internship in Middle or High School Education	6
SCED 433* Reflection and Inquiry in Teaching Practice	2
(with a grade of C or better)	

* Students are required to follow the University calendar with respect to attendance in SCED 433.

► Graduation Requirement

State of Maryland passing scores on appropriate Praxis II exams are required for completion of secondary education certification and graduation. See education advisor regarding appropriate tests and passing scores.

Curriculum Guide: Bachelor of Science in Earth Science

Information regarding course requirements and year-by-year sequence are available upon request from the Geography and Geosciences Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

GEOGRAPHY

Department of Geography and Geosciences
www.salisbury.edu/geography

Dr. Brent Skeeter, Chair
 410-543-6460

All courses applied to the geography major must be completed with grades of C or better. Except for GEOG 204, 219, 319 and 414, the core courses may be taken in any order and a student may register for more than one in a given semester. The Department of Geography and Geosciences recommends that the lower-division core courses (GEOG 201, 204, 219 and GEOL 103) be completed prior to GEOG 414.

Transfer students must complete a minimum of 15 semester hours with grades of C or better in geography at Salisbury 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 secondary teaching certification should contact the Education Specialties Department for advisement early in their program.

While geography majors must satisfy departmental requirements, they are also encouraged to develop a program suitable to their individual needs. The department has five designated tracks: general geography, atmospheric science, physical geography, geographic information science, and environmental and land use planning. Each track 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 tracks, graduate study or career programs should see a departmental advisor.

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

1. Complete the following core courses:

	Credits
GEOG 101 World Geography: Europe and Asia.....	3
or	
GEOG 102 World Geography: Africa and the Americas	3
GEOG 201 Weather and Climate	4
GEOG 203 Economic Geography	3
GEOG 204 Spatial Analysis	4
GEOG 219 Map Interpretation and Analysis	3
GEOG 319 Geographic Information Science	4
GEOG 414 Research and Writing	3
GEOL 103 Introduction to Physical Geology	4

2. Complete the following statistics course:

	Credits
MATH 155 Modern Statistics with Computer Analysis	3

3. Complete one of the following tracks.

General Geography Track

The General Geography Track is designed for students who wish to complete a traditional liberal arts major in geography. This track provides maximum flexibility in developing an individualized program, in consultation with a faculty advisor. The track requirements include a minimum of 15 hours, of which at least 12 hours must be at the 300/400 level and must include at least six hours in human and/or physical geography and/or geology courses at the 300/400 level.

Atmospheric Science Track

The Atmospheric Science Track is focused on the study of atmospheric processes and is designed for students wishing to pursue a career in meteorology and/or climatology. The requirements are:

	Credits
GEOG 312 Severe and Hazardous Weather	3
GEOG 410 Meteorology	3
GEOG 412 Weather Analysis and Forecasting	3
GEOG 413 Applied Climatology	3

Complete at least two courses from the following:

	Credits
GEOG 311 Coastal Processes	3
GEOG 321 Remote Sensing of the Environment	3
GEOG 401 Soil, Water and Environment	3
GEOG 403 Environmental Hazards	3
GEOG 411 Geomorphology	3
GEOG 417 Water Resources	3

Physical Geography Track

The Physical Geography Track is focused on the study of all the major facets of physical geography including coursework in atmospheric science, geology, oceanography and biogeography. The requirements are:

	Credits
GEOG 311 Coastal Processes	3
GEOG 411 Geomorphology	3

Complete four of the following courses. At least one course must be a weather/climate course*:

	Credits
GEOG 312* Severe and Hazardous Weather	3
GEOG 321 Remote Sensing of the Environment	3
GEOG 325 Conservation and Resource Management.....	3
GEOG 401 Soil, Water and Environment	3
GEOG 410* Meteorology	3
GEOG 413* Applied Climatology	3
GEOG 417 Water Resources	3
GEOG 405 Environmental Geology	3

Human Geography Track

The Human Geography Track focuses on spatial distributions of human phenomenon on the surface of the earth, including urban, economic, political and environmental processes and activities. The requirements are

	Credits
GEOG 100 Introduction to Human Geography	3
or	
GEOG 101* World Geography: Europe and Asia.....	3
or	
GEOG 102* World Geography: Africa and the Americas	3
GEOG 308 Principles of Planning.....	3
GEOG 325 Conservation and Resource Management.....	3
GEOG 327 Political Geography	3
GEOG 408 Urban Theory	3

* If taking GEOG 101 or 102, student must take the one not used in the core requirements.

Complete at least two courses from the following:

	Credits
GEOG 301 World Regions	3
GEOG 403 Environmental Hazards	3
GEOG 406 Regional Economic Development	3
GEOG 416 Smart Growth	3
GEOG 417 Water Resources	3

Geographic Information Science Track

The Geographic Information Science Track is focused on developing an understanding of the theory and application of spatial data management techniques, including geographic information systems (GIS), remote sensing and cartography. The requirements are:

	Credits
COSC 117 Programming Fundamentals	4
or	
COSC 118 Introductory Scientific Programming	4
or	
COSC 120 Computer Science I	4
GEOG 419 Advanced Geographic Information Science.....	4

Complete at least two courses from the following:

	Credits
GEOG 320 Cartographic Visualization	3
GEOG 321 Remote Sensing of the Environment	3
GEOG 435 GIS Programming.....	3

Complete two courses in human and/or physical geography at the 300/400 level.

Complete at least one course from the following:

	Credits
ART 227 Computer Graphic Design	3
COSC 220 Computer Science II.....	4
COSC 482 Computer Graphics	3
INFO 211 Information Systems Concepts for Management.....	3
INFO 386 Database Management Systems	3

Environmental and Land Use Planning Track

The Environmental and Land Use Planning track focuses on the application of physical and human geography to understand the theory of land use issues and the practice of land use planning. The requirements are:

	Credits
GEOG 308 Principles of Planning.....	3
GEOG 408 Urban Theory	3

Complete at least three courses from the following:

	Credits
GEOG 328 Applied Planning.....	3
GEOG 402 Environmental Planning	3
GEOG 404 Rural Settlement and Land Use Planning	3
GEOG 406 Regional Economic Growth	3
GEOG 416 Smart Growth	3

Complete at least two courses from the following:

	Credits
GEOG 325 Conservation and Resource Management.....	3
GEOG 401 Soil, Water and Environment	3
GEOG 403 Environmental Hazards	3
GEOG 417 Water Resources	3
GEOG 405 Environmental Geology	3

Upper-Division Certificate in Geographic Information Science Fundamentals

The upper-division certificate requires at least 16 credit hours in geographic information sciences and related mapping science courses. The certificate program is designed to provide students and members of the professional community with the basic applied principles and skills in this area. Students and professionals from any major or professional orientation who need to use GIS are welcome. The requirements are:

	Credits
GEOG 219 Map Interpretation and Analysis.....	3
GEOG 319 Geographic Information Science	4

Complete at least three courses from the following:

	Credits
GEOG 320 Cartographic Visualization	3
GEOG 321 Remote Sensing of the Environment	3
GEOG 419 Advanced Geographic Information Science.....	4
GEOG 435 GIS Programming.....	3

Curriculum Guide: Bachelor of Science In Geography

Information regarding course requirements and year-by-year sequence are available upon request from the Geography and Geosciences Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

MATHEMATICS

Department of Mathematics and Computer Science
 www.salisbury.edu/mathcosc

Dr. Michael J. Bardzell, Chair
 410-543-6140

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.....	4
MATH 213* Statistical Thinking	3
MATH 214* Statistics Laboratory	1
MATH 306 Linear Algebra	4
MATH 310 Calculus III	4
COSC 117 Programming Fundamentals	4
or	
COSC 120 Computer Science I	4

*Students who take MATH 213 must take MATH 214 concurrently.

Students then complete their major in one of six ways: traditional option, applied option, actuarial science track, 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

Students also 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, students must take four more upper-level MATH electives, at least three at the 400 level.

Applied Option

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

	Credits
MATH 311 Differential Equations I	4
MATH 413 Mathematical Statistics I.....	3
MATH 451 Analysis I	3

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

	Credits
MATH 414 Mathematical Statistics II	3
MATH 452 Analysis II	3

Students must study the application of mathematics by completing two of these courses:

	Credits
MATH 460 Operations Research	3
MATH 465 Mathematical Models and Applications	3
MATH 471 Numerical Methods.....	3
MATH 475 Dynamics and Chaos	3
MATH 493 Advanced Topics in Statistics	3

In addition, students must take two upper-level MATH electives, one of which is at the 400 level.

Actuarial Science Track

In addition to completing the mathematics major core, students must complete these 10 courses:

	Credits
ACCT 201 Introduction to Financial Accounting.....	3
ECON 211 Micro-Economics Principles	3
ECON 212 Macro-Economic Principles	3
FINA 311 Financial Management	3
FINA 312 Risk Management and Insurance.....	3
MATH 215 Introduction to Financial Mathematics	4
MATH 314 Intermediate Applied Statistics	3
MATH 413 Mathematical Statistics I.....	3
MATH 414 Mathematical Statistics II	3
MATH 415 Actuarial and Financial Models	4

Students must also take one additional 400-level mathematics course

Computer Science Concentration

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

Complete the following courses:

	Credits
COSC 220 Computer Science II.....	4
COSC 250 Microcomputer Organization	4
COSC 320 Advanced Data Structures and Algorithm Analysis	4
COSC 362 Theory of Computation.....	3

Complete either of the following pairs of courses:

	Credits
COSC 425 Software Engineering I	3
and	
COSC 426 Software Engineering II	3
or	
COSC 350 Systems Software.....	4
and	
COSC 450 Operating Systems.....	3

Complete two additional upper-level MATH or COSC elective courses.

Complete three additional upper-level MATH elective courses, two of which must be at the 400 level.

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

Statistics Concentration

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

Complete the following courses:

	Credits
MATH 313 Survey Design and Sampling.....	3
MATH 314 Intermediate Applied Statistics	3
MATH 411 Design and Analysis of Experiments	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.

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:

Complete five upper-level courses as follows:

	Credits
MATH 406 Geometric Structures	3
MATH 430 Mathematical Connections for Secondary School Teachers	4
MATH 441 Abstract Algebra I	3
MATH 451 Analysis I	3
MATH 460 Operations Research	3
or	
MATH 465 Mathematical Models and Applications	3

► Pre-professional Requirements

1. Complete the following pre-professional requirements with grades of C or better.

	Credits
EDUC 210 School in a Diverse Society	3
ENGL 103 Composition and Research	4
SCED 300 Development, Learning and Assessment.....	3

2. Show satisfactory results on Praxis I, SAT or ACT examinations as defined by the Maryland State Department of Education. See education advisor regarding passing scores.

► Professional Program

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

1. Complete an application for formal admission to the professional program. Obtain written approval of the application from both content and education advisors.
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 the major, including transfer credits.
4. Complete all pre-professional requirements.
5. Complete four courses in the major field.

► Methods Requirements

1. To be eligible for internship, all students enrolled in a secondary or K-12 program must complete the appropriate methods courses for the content major and the following courses in education with grades of C or better:

	Credits
SCED 320 Technology in Mathematics Education	3
SCED 367 Inclusive Instruction for Secondary Teachers.....	3
SCED 434 Classroom Management	3
SCED 373 Mathematics and Reading Methods in the Middle and High School Part I	4
SCED 473 Mathematics and Reading Methods in the Middle and High School Part II	4

2. The Maryland State Board of Education mandates all secondary/K-12 pre-and in-service teachers have six hours coursework in reading. Secondary education majors who complete the secondary education program will have satisfied the six hours course work in reading by program integration.

► Internship and Seminar

Student interns will be assigned to a Professional Development School (PDS) for their internship experience. This internship will consist of a minimum of 100 days. In order to meet the 100-day requirement, interns are required to follow the calendar of the school district in which the PDS is located. Interns are responsible for their own transportation to the PDS site.

Candidates must meet the following requirements for internship:

1. Complete the written application for internship.
2. Complete a minimum of 90 credits including methods and at least eight courses of the academic major (secondary and K-12 programs).
3. Have an overall grade point average of at least 2.50 including transfer credit.
4. Have a minimum grade point average of at least 2.75 in the academic major courses, including transfer credits, as defined by each academic department.
5. Have a minimum average of 2.75 in professional education courses with no grade below C. Students may repeat education courses only once.
6. Obtain verification of completion of these requirements from the director of field experiences.

All secondary education majors are required to pass the following:

	Credits
SCED 426 Internship in Middle or High School Education	6
SCED 428 Internship in Middle or High School Education	6
SCED 433* Reflection and Inquiry in Teaching Practice	2

* Students are required to follow the University calendar with respect to attendance in SCED 433.

► Graduation Requirement

State of Maryland passing scores on appropriate Praxis II exams are required for completion of secondary education certification and graduation. See education advisor regarding appropriate tests and passing scores.

General Information

► Prerequisites

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

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.

► Transfer Students

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 University.

► Departmental Honors

To qualify for departmental honors, a student must meet all of the following criteria:

Academics

1. The student must qualify for institutional honors (cum laude or better).
2. The student must complete at least 18 hours of upper-division courses in mathematics and/or computer science at Salisbury University.
3. The student must earn a cumulative GPA of at least 3.75 in all upper-level courses in mathematics and/or computer science taken at Salisbury University.

Research

1. The student must assemble an Honors Advisory Committee consisting of an advisor and two additional faculty members. This committee must be approved by the department chair. The advisor must be on the faculty of the Department of Mathematics and Computer Science.
2. The student must write an honors thesis. This thesis must consist of original research in a subject area approved by the thesis committee.
3. The student must give a presentation of his/her research to the Department of Mathematics and Computer Science.
4. The student must be approved for departmental honors by an absolute majority of the Department of Mathematics and Computer Science faculty. (An "absolute majority" requires that the number of "yes" votes minus the number of "no" votes is not less than half of the total number of faculty voting, counting abstentions.) The faculty will make this decision based on both the student's written thesis and the student's research presentation.

Contact the Mathematics and Computer Science Department for additional information.

Curriculum Guide: Bachelor of Science

In Mathematics

Information regarding course requirements and year-by-year sequence are available upon request from the Mathematics and Computer Science Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

MEDICAL LABORATORY SCIENCE

Department of Health Sciences

www.salisbury.edu/healthsci/medtech

Dr. Diane Davis, Program Director
and Clinical Coordinator

410-548-4787

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 laboratory science.

► General Information

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, Johns Hopkins Hospital, Mercy Medical Center, Upper Chesapeake Medical Center, Frederick Memorial, Nanticoke Memorial Hospital, Atlantic General Hospital and Dorchester General 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 program director.

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.

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.

1. Required courses must be completed with a grade of "C" or better:

	Credits
BIOL 211 Microbiology	4
BIOL 215 Anatomy and Physiology I	4
BIOL 216 Anatomy and Physiology II.....	4
CHEM 121 General Chemistry I	4
CHEM 122 General Chemistry II	4
ENGL 103 Composition and Research	4
MATH 155 Modern Statistics with Computer Analysis	3

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

	Credits
MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory.....	1
MDTC 300 Principles of Medical 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	4
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 Advising Program (HPAP) 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 catalog for more information.

► Upper-Division Professional Program

Admission to the Medical Laboratory Science (MLS) Professional Program is a two-step process which includes both admission to Salisbury University and acceptance into the upper-division professional program. Admission to Salisbury University does not guarantee acceptance to the upper-division professional program as space is limited each year. Students should declare a major in MLS early in their academic careers to assure appropriate advisement. Decisions regarding acceptance occur during the spring semester prior to the start of fall classes, usually by mid-March in time for program planning. Due to course sequencing, students must begin the upper-division program in the fall semester only.

► Admission to the Upper-Division Professional Program

Note: Admission requirements will be changing for spring 2014 applicants. If you have questions or would like details, contact the program director.

Application to the upper-division professional program should occur in spring of the sophomore year. Admission decisions are based on satisfactory completion of 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 on the department Web site (www.salisbury.edu/healthsci/MEDTECH). Space is limited; therefore, satisfactory completion of the lower-division requirements does not guarantee admission to the upper-division program.

Students wishing to be considered for admission to the professional program must do the following:

1. Complete ENGL 103 (catalog prior to Fall 2008: ENGL 101 and 102) with a grade of C or better.
2. Earn a minimum 2.0 cumulative grade point average when calculating all undergraduate coursework taken at all institutions. This includes transfer courses.
3. Successfully complete the following courses with grades of C or better: General Chemistry I and II (CHEM 121 and 122), Anatomy and Physiology I and II (BIOL 215 and 216), General Microbiology (BIOL 211) and Modern Statistics (MATH 155).
4. Complete an application form and submit it by March 1.

► Admission Decisions

The MLS Professional Program Admission Committee reviews applications which meet the minimum admission eligibility requirements. Priority for admission into the upper-division professional program is given to students with the highest cumulative grade point average for all undergraduate course work taken at all institutions and for students completing an approved articulated program. Applicants accepted into the professional program are notified in writing and their admission is contingent upon completion of any outstanding requirements by the first day of the fall term.

► 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 Medical Laboratory Science

The following is a sample sequence of courses for freshman students majoring in medical laboratory science. Information regarding course requirements and sequence beyond the freshman year is available upon request from the Health Sciences Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

FRESHMAN YEAR		Credits
BIOL 215	Anatomy and Physiology I	4
CHEM 121	General Chemistry I	4
ENGL 103	Composition and Research	4
HIST 10X	Gen. Ed. IIA (HIST 101, 102 or 103)	4
		16
BIOL 216	Anatomy and Physiology II	4
CHEM 122	General Chemistry II	4
ENGL XXX	Gen. Ed. IB Literature course	4
PHEC 106	Personalized Health/Fitness	3
MDTC 101	Safety in the Biological, Chemical and Clinical Laboratory	1
		16

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

For a major checklist visit www.salisbury.edu/checklists.

NURSING

Department of Nursing
www.salisbury.edu/nursing

Dr. Lisa Seldomridge, Chair
410-543-6401

There are four types of students who may seek an undergraduate degree (B.S.) in nursing:

1. Traditional undergraduate students (first bachelor's degree)
2. RNs with an associate's degree in nursing and no previous bachelor's degree

- RNs with an associate's degree in nursing and an unrelated bachelor's degree
- Second bachelor's degree students

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 120 semester hours.

Traditional Undergraduate

- Satisfy the following support courses:

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

- Complete the following nursing core (C or better required for all core courses):

	Credits
NURS 310 Care of Adults I	3
NURS 311 Adult I Clinical	3
NURS 312 Introduction to Professional Nursing Practice	3
NURS 319 Health Assessment	3
NURS 329 Research Methods	3
NURS 350 Care of Adults II	3
NURS 351 Adult II Clinical	3
NURS 360 Care of Children and Adolescents	3
NURS 361 Care of Children and Adolescents Clinical	2
NURS 370 Maternal-Newborn	3
NURS 371 Maternal-Newborn Clinical	3
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 440 Senior Seminar	3
NURS 441 Internship	3
NURS XXX Nursing Elective	3

► Nursing Program Admission

Students with an interest in nursing should declare nursing as their major upon application to the University. Enrollment in the nursing major is a two-step admission process—admission to the University with a separate admission/approval process to begin the upper-division nursing courses. Admission to the University does not guarantee acceptance to begin the upper-division nursing courses. Students are eligible to begin the upper-division required nursing courses upon successful completion of the admission requirements and approval by the Nursing Department Student Policies Committee. Decisions regarding acceptance to begin the upper-division nursing courses occur during the spring semester prior to the start of fall of classes, usually by March 1. Due to course sequencing students must begin the upper-division nursing courses in the fall semester only. The admission requirements and priorities are listed below.

Enrollment Requirements

- Students in health care professions must meet certain requirements for regular physical examinations and provide evidence of immunity from communicable diseases in conformity with the recommendations for Health Care Workers provided by the Centers for Disease Control. These recommendations are subject to change. Details and updated requirements are available on the departmental Web site.

- Due to changing clinical site and agency regulations, SU students who accept admission to the nursing program may be asked to undergo a criminal background check in order to participate in some clinical rotations. It is highly possible that in the near future all students will have to undergo criminal background checks for some or all clinical experiences. The Department of Nursing will provide information for students as it becomes available and it will be the students' responsibility to have the background checks completed.
- Current certification in cardiopulmonary resuscitation (CPR) by the American Heart Association or the American Red Cross is required. The course must be one designed for a health care provider, such as the AHA's module C course and it must require a personal skills check-off.

Admission to Upper-Division Courses In the First Bachelor's Degree Nursing Program:

All students, including those currently enrolled at SU as well as transfer students, are considered on a competitive and space-available basis. Decisions regarding acceptance to begin upper-division nursing courses are made according to the cumulative GPA from all institutions attended, score on assessment exam and with consideration of the overall academic record. To be considered for admission to the upper-division nursing courses, current and prospective students must fulfill the following requirements.

- Must be admitted to Salisbury University.
- All transcripts from all previous academic institutions attended must be sent to the Admissions Office.
- Prior to the fall semester in which students plan to begin the upper-division coursework, they must successfully complete, or have a plan to complete, all nursing prerequisite coursework with no more than one grade lower than a C (BIOL 334 must be completed with a C). The nursing prerequisite courses include: BIOL 211, BIOL 215, BIOL 216, BIOL 217, BIOL 334, CHEM 121, CHEM 122 and PSYC 300.
- Submit the Application - First Degree Nursing Program form to the Nursing Department by February 1, indicating interest in beginning the upper-division nursing courses in the fall semester. The Request to Enroll form is available from the Nursing Department Web site at www.salisbury.edu/nursing or can be obtained from the department secretary (Devilbiss Hall Room 235). Again, applications are considered on a competitive and space-available basis.
- Register for, schedule and complete the Evolve Reach Admission Assessment Exam (A2) at a Prometrics testing center. Go to www.salisbury.edu/nursing for more information.

Curriculum Guide: Bachelor of Science in Nursing

The following is a sample sequence of courses for students majoring in nursing. Students should consult regularly with their advisors when developing their individual program plans and selecting courses. Note that the upper-division plan is for students who have been admitted to the nursing program.

FRESHMAN YEAR	Credits
BIOL 215 Anatomy and Physiology I	4
ENGL 103 Composition and Research	4
HIST 10X Gen. Ed. IIA (HIST 101, 102 or 103)	4
PHEC 106 Individualized Health Fitness	3
	15

ENGL XXX	Gen. Ed. IB Literature course.....	4
BIOL 216	Anatomy and Physiology II.....	4
CHEM 121	General Chemistry I.....	4
PSYC 101	General Psychology.....	4
		16

SOPHOMORE YEAR		Credits
BIOL 211	Microbiology.....	4
CHEM 122	General Chemistry II.....	4
HIST XXX	Gen. Ed. IIB History course.....	4
PSYC 300	Developmental Psychology.....	4
		16

BIOL 334	Pathophysiology.....	4
BIOL 217	Nutrition.....	3
MATH 155	Modern Statistics.....	3
SOCI/ CADR XXX	Sociology / Conflict Analysis Elective.....	4
	Gen. Ed. Group IIIA or IIIC.....	3-4
		17-18

JUNIOR YEAR		Credits
NURS 310	Nursing Care of Adults I.....	3
NURS 311	Nursing Care of Adults I Clinical.....	3
NURS 312	Introduction to Professional Nursing Practice.....	3
NURS 319	Health Assessment.....	3
		12

NURS 329	Research Methods.....	3
NURS 350	Nursing Care of Adults II.....	3
NURS 351	Nursing Care of Adults II Clinical.....	3
NURS 370	Maternal-Newborn Nursing.....	3
NURS 371	Maternal-Newborn Nursing Clinical.....	3
or		
NURS 360	Care of Children and Adolescents.....	3
and		
NURS 361	Care of Children and Adolescents Clinical.....	2
		14-15

SENIOR YEAR		Credits
NURS 370	Maternal-Newborn Nursing.....	3
and		
NURS 371	Maternal-Newborn Nursing Clinical.....	3
or		
NURS 360	Care of Children and Adolescents.....	3
and		
NURS 361	Care of Children and Adolescents Clinical.....	2
NURS 380	Psychiatric Mental Health.....	3
NURS 381	Psychiatric Mental Health Clinical.....	3
	Elective (if needed for 120 credits).....	2-3
		13-15

NURS 430	Community Health Nursing.....	3
NURS 431	Community Health Nursing Practicum.....	3
NURS 440	Senior Seminar.....	3
NURS 441	Internship.....	3
NURS XXX	Nursing Elective.....	3
		15

For a major checklist visit www.salisbury.edu/checklists.

RNs (No Previous Bachelor's Degree)

The RN-B.S. program is for RN students pursuing a B.S. as a nursing major. A total of 120 credits must be completed to earn a B.S. Upon admission to the nursing major at Salisbury University, students may receive up to 61 academic transfer credits from their associate degree program. They will therefore need to complete additional credits (as outlined below) for the B.S. At least 30 of the credits must be upper-division courses taken at SU. The prerequisite for enrollment in all nursing courses is an active unencumbered Maryland or compact RN license. Upon satisfactory completion of all prerequisite and required coursework, registered nurses with active unencumbered Maryland or compact RN licenses will be awarded 30 additional credits after completion of all required coursework at Salisbury University.

► Additional Non-Nursing Requirements

Refer to RN-to-B.S. checklist for the additional non-nursing requirements. The checklist is available from the Nursing Department and on the departmental and University checklists Web site.

► Required Nursing Courses

RN students are required to complete the following by enrollment (18 credits):

		Credits
NURS 319	Health Assessment (Fall).....	3
NURS 329	Research Methods (Spring).....	3
NURS 430	Community Health Nursing (Fall and Spring).....	3
NURS 431	Community Health Nursing Practicum (Fall and Spring).....	3
NURS 440	Senior Seminar (Spring).....	3
NURS 441	Internship (Spring).....	3
or		
NURS 442	Nursing Leadership and Management (Fall).....	2
NURS 443	Nursing Leadership Practicum (Fall).....	2
NURS 490	Independent Study (Fall, Spring).....	2

► Nursing Elective Courses

Complete six credits from the following suggested elective courses:

		Credits
NURS 325	Life and Death Issues.....	3
NURS 408	Alternative and Complementary Therapies.....	3
NURS 458	Critical Care: A Multi-Professional Approach.....	3
NURS 485	School Health.....	3
NURS 490	Independent Study.....	1-6

► Maryland Articulation Agreement

A Nursing Agreement was approved by the Maryland Higher Education Commission Advisory Committee and the deans and directors of baccalaureate and associate degree programs and became effective July 2003. This replaces the 1999 model. This agreement is binding upon public colleges and schools and is voluntary for private colleges and schools in Maryland.

RN to B.S. Articulation Model: No more than half of the baccalaureate degree, with a maximum of 70 non-nursing credits will be accepted from a community college. Nursing credits will not be transferred. However, registered nurses with an active unencumbered Maryland or compact RN license are awarded a minimum of 30 nursing credits after satisfactory completion of all course work at SU.

Transfer Credits: Under the Maryland Nursing Articulation Model, credits are awarded for transferable nursing and non-nursing courses at the college level. Vocational-technical and non-college general education courses do not transfer, subject to individual college policies. No more than half the credits for a degree can be transfer credits.

– Maryland Board of Nursing Communicator, 17(2) Fall 2003.

RNs (Previous, Non-Nursing Bachelor's Degree)

An individualized program will be set up on a case by case basis.

Second Bachelor's Degree

The Department of Nursing of the Richard A. Henson School of Science and Technology offers a Second Degree Bachelor's Program for non-nursing college graduates leading to a Bachelor of Science in nursing. The curriculum, acknowledging the education, career and life experiences of the individual, requires fewer pre-requisites for the nursing

courses than the basic baccalaureate nursing program of study. Students may complete the second bachelor's degree in three semesters of full-time study.

To be eligible for admission to the Second Degree Program, students must have completed a bachelor's degree from an accredited college or university. Students from all majors (including diploma or associate degree-prepared registered nurses with a baccalaureate degree in non-nursing majors) are eligible to apply for admission.

Applicants for admission to the Second Degree Bachelor's Program must first meet all University requirements and be admitted to the University by the Admissions Office. Once admitted to the University, applicants are reviewed by the Department of Nursing for admission to the Second Degree Program. Admission is competitive and is based on evaluation of the applicant's overall qualifications.

In order to be eligible for admission to the Second Degree Program, students must meet the following requirements:

- a. Students must have completed a bachelor's degree from an accredited college or university and have a minimum cumulative grade point average for previous academic work of 3.0 on a 4.0 scale. Applicants with a cumulative GPA between 2.75 and 3.0 and an otherwise strong application may be considered for provisional admission. Students admitted provisionally are required to achieve a minimum cumulative GPA of 2.75 on their first 15 credits of coursework.
- b. International students must demonstrate proficiency in the English language. Additional Salisbury University requirements for admission of international students must be met. All international applications will be reviewed by a University international student admissions counselor.
- c. Applicants must demonstrate mastery in the following subjects: basic statistics, microbiology, anatomy and physiology I and II (all body systems), chemistry or physics and pathophysiology. Mastery may be established by earning academic credit for course work, by successfully challenging a department exam given for the course, or by successfully passing a standardized test in the specific area of study.

NOTE: Admission to the University does not guarantee acceptance into the Second Degree Nursing Program. Enrollment in the Second Degree Nursing program is a two-step process:

1. Admission to the University, and
2. Approval and Admission by the Nursing Department.

Application to the Second Degree Nursing Program requires that students submit an application packet (hard copy) for consideration to the Nursing Department. This is a competitive application process and is based on an evaluation of students' overall qualifications. Eligibility and application requirements to apply for admission consideration may be found at www.salisbury.edu/nursing/SecDeg.html. All second bachelor's degree students must meet the enrollment requirements listed previously in this section.

Curriculum Guide: Second-Degree Program

The following is the sequence of courses for students in the Second Degree Program. Information regarding course requirements is available upon request from the Nursing Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

SEMESTER 1		Credits
NURS 310	Care of Adults I.....	3
NURS 311	Care of Adults I Clinical	3
NURS 312	Introduction to Professional Nursing Practice	3
NURS 319	Health Assessment.....	3
		12
SEMESTER 2		
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
SEMESTER 3		
NURS 380	Psychiatric Nursing.....	3
NURS 381	Psychiatric Clinical	3
NURS 430	Community Health	3
NURS 431	Community Health Clinical	3
NURS 442	Nursing Leadership/Management	2
NURS 443	Nursing Leadership/Management Practicum	2
		16

For a major checklist visit www.salisbury.edu/checklists.

PHYSICS

Department of Physics

www.salisbury.edu/physics

Dr. Andrew J. Pica, Chair

410-543-6485

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 221	Physics I	4
PHYS 223	Physics II	4
PHYS 225	Physics III	3
PHYS 309	Mathematical Physics.....	3
PHYS 311	Electrical Circuits and Electronics	4
PHYS 313	Introduction to Modern Physics	3
PHYS 314	Mechanics	3
PHYS 315	Electricity and Magnetism	3

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

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

General Physics Track

Students pursuing general physics must fulfill the following requirements beyond the physics core:

1. Complete the following courses:

		Credits
PHYS 316	Quantum Mechanics.....	3
PHYS 407	Senior Laboratory.....	3
PHYS 470	Senior Seminar.....	1
PHYS 490	Research in Physics.....	2

2. Satisfy three additional 300/400-level physics courses.

	Credits
PHYS 317 Astrophysics	3
PHYS 318 Semiconductor Physics	3
PHYS 319 Thermodynamics and Statistical Mechanics	3
PHYS 320 Waveoptics	3
PHYS 321 Analog Electronics	3
PHYS 322 Digital Electronics	4
PHYS 410 Advanced Math Physics	3
PHYS 413 Computer Architecture and Interfacing	3
PHYS 414 Advanced Mechanics	3
ENGR 482 Microwave Engineering	3

Engineering Physics Track

Physics majors pursuing the engineering physics track must fulfill the following requirements beyond the physics core:

	Credits
ENGR 100 Introduction to Engineering Design	3
ENGR 110 Statics	3
ENGR 220 Mechanics of Materials	3
ENGR 221 Dynamics	3
ENGR 232 Thermodynamics	3
ENGR 331 Fluid Mechanics	3
PHYS 321 Analog Electronics	3
PHYS 322 Digital Electronics	4
PHYS 413 Computer Architecture and Interfacing	3
PHYS 470 Senior Seminar	1
PHYS 490 Research	2

Microelectronics Track

Physics majors pursuing microelectronics must complete the following courses beyond the physics core:

	Credits
PHYS 316 Quantum Mechanics	3
PHYS 318 Semiconductor Physics	3
PHYS 321 Analog Electronics	3
PHYS 322 Digital Electronics	4
PHYS 413 Computer Architecture and Interfacing	3
PHYS 470 Senior Seminar	1
PHYS 475 Capstone Design Project	2

Teacher Certification

Students seeking licensure to teach physics in secondary schools must complete the following science and education requirements beyond the physics core. Students may repeat education courses only once.

	Credits
BIOL 101 Fundamentals of Biology	4
PHYS 108 Introduction to Astronomy	4
CHEM 207/	
MDTC 101 Laboratory Safety	1
GEOL 103 Introduction to Physical Geology	4
or	
GEOG 104 Earth and Space Science	4

► Pre-professional Requirements

1. Complete the following pre-professional requirements with grades of C or better.

	Credits
EDUC 210 School in a Diverse Society	3
ENGL 103 Composition and Research	4
SCED 300 Development, Learning and Assessment	3

2. Show satisfactory results on Praxis I, SAT or ACT examinations as defined by the Maryland State Department of Education. See education advisor regarding passing scores.

► Professional Program

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

1. Complete an application for formal admission to the professional program. Obtain written approval of the application from both content and education advisors.
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 the major, including transfer credits.
4. Complete all pre-professional requirements.
5. Complete four courses in the major field.

► Methods Requirements

1. To be eligible for internship, all students enrolled in a secondary or K-12 program must complete the appropriate methods courses for the content major and the following courses in education with grades of C or better:

	Credits
SCED 318 Computers in Education	3
or	
SCED 319 Technology in Education	1
SCED 367 Inclusive Instruction for Secondary Teachers	3
SCED 434 Classroom Management	3
SCED 374 Science and Reading Methods in the Middle and High School Part I	4
SCED 474 Science and Reading Methods in the Middle and High School Part II	4

2. The Maryland State Board of Education mandates all secondary/K-12 pre-and in-service teachers have six hours coursework in reading. Secondary education majors who complete the secondary education program will have satisfied the six hours course work in reading by program integration.

► Internship and Seminar

Student interns will be assigned to a Professional Development School (PDS) for their internship experience. This internship will consist of a minimum of 100 days. In order to meet the 100-day requirement, interns are required to follow the calendar of the school district in which the PDS is located. Interns are responsible for their own transportation to the PDS site.

Candidates must meet the following requirements for internship:

1. Complete the written application for internship.
2. Complete a minimum of 90 credits including methods and at least eight courses of the academic major (secondary and K-12 programs).
3. Have an overall grade point average of at least 2.50 including transfer credit.
4. Have a minimum grade point average of at least 2.75 in the academic major courses, including transfer credits, as defined by each academic department.
5. Have a minimum average of 2.75 in professional education courses with no grade below C. Students may repeat education courses only once.
6. Obtain verification of completion of these requirements from the director of field experiences.

All secondary education majors are required to pass the following:

	Credits
SCED 426 Internship in Middle or High School Education	6
SCED 428 Internship in Middle or High School Education	6
SCED 433* Reflection and Inquiry in Teaching Practice	2
(with a grade of C or better)	

* Students are required to follow the University calendar with respect to attendance in SCED 433.

► Graduation Requirement

State of Maryland passing scores on appropriate Praxis II exams are required for completion of secondary education certification and graduation. See education advisor regarding appropriate tests and passing scores.

Dual-Degree 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. Under the program, a student normally attends Salisbury University for three years and one of the cooperating engineering schools for two years. During the first three years at SU the student must complete all required General Education courses, the physics core and all prescribed courses as determined by the particular engineering program, maintain a 3.0 grade point average, and apply for admission to one of the collaborating engineering schools. Transfer students entering the dual-degree program are required to complete a minimum of 60 semester hours at SU. An additional 30 hours must be completed at the receiving institution with at least 15 hours in engineering or related courses to receive a physics degree from Salisbury University. To receive an engineering degree, an additional 30 hours (for a total 150) must be completed at the receiving institution. Upon successful completion of the five-year program, a student will be awarded a baccalaureate degree from Salisbury University as well as an appropriate engineering degree from the engineering school attended.

The courses at Salisbury University which are required for the dual-degree engineering program are described in this catalog 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 University in meeting the requirements for graduating with honors.

Curriculum Guide: Bachelor of Science in Physics

Information regarding course requirements and year-by-year sequence are available upon request from the Physics Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

RESPIRATORY THERAPY

Department of Health Sciences

www.salisbury.edu/healthsci/respcares.html

Dr. Robert Joyner, Program Director

410-543-6410

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.

Admissions Policy

Students interested in respiratory therapy should declare respiratory therapy as their major upon application to the University. Enrollment in the respiratory therapy major is a two-step process: first admission to the University with a second admission process to begin the upper-division respiratory therapy courses. Admission to the University does not guarantee acceptance to begin upper-division respiratory therapy courses.

Decisions regarding acceptance to begin upper-division respiratory therapy courses is made during the spring semester, prior to preregistration for fall classes. Upon acceptance into the Respiratory Therapy Program, students are eligible to enroll in upper-division respiratory therapy courses.

► Admission Procedures

Due to course sequencing students must begin the upper-division respiratory therapy courses in the fall semester only. All students, including those currently enrolled at SU, as well as transfer students, are considered on a competitive and space-available basis. Decisions regarding acceptance to begin upper-division respiratory therapy courses are made according to cumulative GPA (no less than 2.3) from all institutions attended and with consideration of the overall academic record. Priority for admission into the professional program is given to students with the highest cumulative grade point average.

To be considered for admission to the upper-division respiratory therapy courses, current and prospective students must fulfill the following requirements:

1. Must be admitted to Salisbury University.
2. All transcripts from all previous academic institutions attended must be on file in the admissions office.
3. Ordinarily, students must have completed all Salisbury University General Education requirements.
4. Prior to the fall semester in which students plan to begin the upper-division coursework, they must successfully complete or have a plan to complete all respiratory therapy prerequisite coursework with no grade lower than a C.

Respiratory therapy prerequisite courses include: BIOL 211, 215, 216, CHEM 121, 122, MATH 135, 155 and RESP 210.

- Submit the Intent to Enroll form prior to February 10 of each year. This form is available on the Respiratory Therapy Program Web site (www.salisbury.edu/healthsci) or from the Health Sciences Department office.

Program Requirements

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.

- Complete prerequisite science and math courses:

	Credits
BIOL 211 Microbiology	4
BIOL 215 Human Anatomy and Physiology	4
BIOL 216 Human Anatomy and Physiology	4
CHEM 121 General Chemistry I	4
CHEM 122 General Chemistry II	4
MATH 135 College Algebra	3
MATH 155 Modern Statistics	3
RESP 210 Foundation Studies in Respiratory Therapy	3

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

	Credits
RESP 301 Patient Care Procedures	4
RESP 302 Basic Respiratory Procedures/Clinical Practicum	5
RESP 303 Cardiopulmonary Physiology	3
RESP 304 Cardiopulmonary Disease	3
RESP 321 Advanced Respiratory Care	4
RESP 322 Pharmacology	3
RESP 323 Clinical Practicum II	5
RESP 400 Fundamentals of Respiratory Care Research	2
RESP 401 Neonatal and Pediatric Respiratory Care	4
RESP 402 Cardiopulmonary Diagnostics and Rehabilitation	4
RESP 403 Clinical Practicum III	5
RESP 404 Management Practices in Health Services	3
RESP 420 Respiratory Care Seminar	4
RESP 424 Critical Care Specialization	5
RESP 425 Diagnostics Specialization	4

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.

Curriculum Guide: Bachelor of Science In Respiratory Therapy

Information regarding course requirements and year-by-year sequence are available upon request from the Health Sciences Department. Students should consult regularly with their advisors when developing their individual program plans and selecting courses.

For a major checklist visit www.salisbury.edu/checklists.

Graduate Programs

MASTER OF SCIENCE IN APPLIED BIOLOGY

Department of Biological Sciences

www.salisbury.edu/biology/MS_Applied_Biology.html

Dr. Dana Price, Program Director

410-543-6498

The M.S. in applied biology addresses the growing need for a technologically trained workforce with special skills in laboratory, biotech and environmental science.

The curriculum emphasizes skills development in a research setting and relates practical experiences to a strong background in theory. The department views the two-year thesis program as the principal choice for most students, especially for those who plan to continue their graduate study beyond the M.S. level. However, an accelerated 4+1 M.S. thesis program for advanced undergraduates and an optional non-thesis program are also available. The choice of program options is made in consultation with a graduate advisor in the department.

Admission

Admission to the M.S. in applied biology at SU requires an application for graduate program admission, the application fee, official transcripts from all colleges and universities attended, the Residency/Domicile Information form (for those students applying for in-state tuition) and the following program-specific credentials:

- An undergraduate degree (in biology or related field) with a minimum cumulative GPA of 3.0 on a 4.0 point scale. In addition to coursework in biology, student transcripts should demonstrate the completion of prerequisite courses in chemistry (two courses in general chemistry and at least one semester of organic chemistry), at least one course in physics and a course in statistics.
- Three letters of recommendation from individuals qualified to judge the applicant's potential for success in a graduate program.
- A personal statement relating the applicant's goals and career objectives as well as research interests and potential graduate advisors in the department.
- Scores on the general Graduate Record Exam (GRE) at or above the 50th percentile. Scores on the biology GRE are optional but if submitted will be considered in admission decisions.
- All applicants (thesis and non-thesis) are encouraged to make contact with prospective graduate advisor(s) in the department prior to submission of an application for admission to the program. M.S. thesis students must make such contact and will not be admitted without the endorsement of a graduate advisor for their research.
- International students are referred to additional guidelines described in the current Salisbury University catalog.

g. Students transferring to SU from other universities may receive a maximum of six transfer credits for courses in which they have earned a grade of B or better. Each course will be individually assessed for program equivalency. Determination of allowable credit for work completed elsewhere will be made at the time of admission by the director of the graduate program.

Application materials should be received by the biology graduate program director by March 1 for full consideration.

Program Requirements

The complete program consists of 33 credit hours of graduate work, which will generally be completed in a two-year period. Two different program options are offered. These are:

- M.S. thesis
- M.S. non-thesis.

Both versions of the program include a substantial component of laboratory and/or field work and certification of an Allied Professional Skill. Graduate students must maintain a 3.0 GPA with no grade lower than a C.

► Core Courses

Complete the following 12 hours (taken by all students in four consecutive semesters; one course offered each semester in a two-year rotation):

	Credits
BIOL 501 Modern Concepts in Biology	3
BIOL 502 Biology and Environment	3
BIOL 503 Contemporary Cell Biology.....	3
BIOL 504 Perspectives in Modern Genetics.....	3

► Thesis Option

Complete the core and 21 additional hours:

	Credits
BIOL 515 Research in Biology	12
BIOL 601 Thesis Preparation	3
BIOL XXX Graduate Elective Courses*	6

► Non-Thesis Option

Complete the core and 21 additional hours:

	Credits
BIOL 515 Research in Biology	12
BIOL XXX Graduate Elective Courses*	9

► M.S. in Applied Biology 4+1 Program

The accelerated M.S. program in applied biology is designed to provide exceptional Salisbury University undergraduates of high ability and achievement the opportunity to begin their graduate studies during their senior year. The purpose of the accelerated program is two-fold. It recognizes excellence in undergraduate research by allowing that work to form the basis of a graduate master's biology thesis, and it enables the excellent student to complete both the B.S. biology and M.S. applied biology programs in approximately five years.

Students currently enrolled as undergraduates at SU are eligible to apply for the accelerated program during their junior year provided that they:

- a. have a 3.30 GPA at the end of the semester during which they apply,
- b. have engaged in significant undergraduate research with a faculty advisor who can endorse their application for admission to the program,

c. meet all the requirements, including prerequisite course work, for post-graduate admission to the program by the end of the semester in which they are applying for admission to the accelerated program.

For students accepted into the accelerated program, up to nine credits of graduate course work may be taken during the senior year and applied to both the B.S. and M.S. programs. Six of these credits will include the graduate classes (BIOL 501-504) offered during the student's senior year. The remaining three may include research.

► Graduate Electives*

	Credits
BIOL 500 Wetland Ecology.....	3
BIOL 505 Ornithology	3
BIOL 507 The Biology of Fishes.....	3
BIOL 510 Estuarine Biology	3
BIOL 522 Vertebrate Physiology.....	3
BIOL 525 Toxicology	3
BIOL 530 Plant Physiology	3
BIOL 533 Environmental Microbiology	3
BIOL 535 Evolutionary Biology	3
BIOL 540 Contemporary Genetics	3
BIOL 545 Virology.....	3
BIOL 552 Advanced Human Physiology/Pathophysiology	3
BIOL 560 Biology of Cell Membranes	3
BIOL 565 Advanced Cell Biology	3
BIOL 590 Special Topics in Biology	3

► Allied Professional Skills Requirement

Students completing the M.S. in applied biology must demonstrate their applied expertise by developing proficiency in an Allied Professional Skill. Allied Professional Skills include computer programming, geospatial analysis, foreign language, technical writing, etc. The choice of Allied Professional Skill is left to the student in consultation with the advising committee. Skills should be relevant to the student's research or career goals, should be chosen early in the student's program of study and are subject to approval of the Graduate Advisory Committee.

Allied Professional Skills must be certified by the completion of a course or by written certification from a faculty member who is expert at the skill chosen. If a course of instruction is necessary for certification of an Allied Professional Skill, the credits earned in that course may not be counted toward the number required for graduation. Students who develop their applied proficiency through directed study may register for a two-credit course: BIOL 590 Topics: Allied Professional Skill.

MASTER OF SCIENCE IN APPLIED HEALTH PHYSIOLOGY

Department of Health Sciences
www.salisbury.edu/ahph

Dr. Sid Schneider, Program Director
410-543-6409

The Master of Science (M.S.) in applied health physiology is a professional degree program designed to prepare leaders in the fields of health care/wellness and fitness. The program offers three possible areas of focus: cardiovascular/pulmonary rehabilitation, strength and conditioning, and fitness/wellness. The program provides academic preparation for students seeking certification by the American College of Sports Medicine as exercise specialists or by the National Strength and Conditioning Association as certified strength and conditioning specialists (CSCS). The academic coursework prepares students for careers in health care settings such as hospitals, youth and geriatric centers, state and local health departments, corporate wellness programs, personal trainers, and strength and conditioning coaches for sports teams. The academic and clinical faculty members provide multiple opportunities for hands-on experience in addition to traditional classroom interactions. Visit the applied health physiology Web site at www.salisbury.edu/ahph.

► Admission

A. Admission to the Master of Science (M.S.) in applied health physiology at SU requires:

1. Completion of a baccalaureate degree with a minimum GPA of 3.0 on a 4.0 scale. Applicants with a cumulative GPA between 2.75 and 2.99 may be considered.
2. Completion of an application for graduate studies.
3. Payment of the application fee.
4. Submission of official transcript(s) from all colleges/universities attended.
5. Two academic letters of recommendation.
6. One-page personal letter stating career goals(s).
7. For international students, the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) is required. Contact program for further information.

B. Prerequisite undergraduate coursework for all candidates includes:

1. Human Anatomy and Physiology (eight credit hours, e.g. BIOL 215 & 216)
2. Exercise Physiology (four credit hours, e.g. EXSC 332)

C. Additional prerequisite undergraduate coursework depending on area of focus:

1. For Cardiovascular/Pulmonary Rehabilitation: Stress Testing and Exercise Prescription (four credit hours, e.g. EXSC 481). In addition, Kinesiology or Biomechanics (four credit hours, e.g., EXSC 333) will also be required to meet American College of Sports Medicine (ACSM) criteria for Board Certification.
2. For Strength and Conditioning: Kinesiology or Biomechanics (four credit hours, e.g. EXSC 333).
3. For Fitness/Wellness: Stress Testing and Exercise

Prescription (four credit hours, e.g. EXSC 481). In addition, Kinesiology or Biomechanics (four credit hours, e.g., EXSC 333) will also be required to meet ACSM criteria for Board Certification.

Please Note:

- Equivalent transfer (from another institution) coursework will be evaluated for satisfying prerequisites prior to admission. Students lacking prerequisite coursework may be granted provisional admission by agreeing to complete prerequisite coursework within the first year of the program.
- A Residency/Domicile Information Form needs to be completed for in-state tuition status.

► Registration for Courses

Students in the AHPH program register for all courses using the Salisbury University schedule of course offerings.

Program of Study

The Master of Science (M.S.) in applied health physiology requires the completion of 36 credit hours, of which a minimum of 27 credit hours are earned at Salisbury University. The program must be completed with a cumulative grade point average no lower than 3.0, with no more than six credit hours below a grade of B and no grade lower than a C. A maximum of two course repetitions for the purpose of grade improvement is allowed. Students whose cumulative grade point average falls below 3.0 will be placed on academic probation according to University policy.

Program requirements are as follows:

► Core Courses (12 credit hours)

	Credits
AHPH 532 Exercise Metabolism	3
AHPH 534 Human Psychophysiology	3
AHPH 542 Exercise Programming, Nutrition and Weight Management.....	3
AHPH 553 Clinical Physiology	3

► Research Methods Courses (nine credit hours)

	Credits
AHPH 502 Introduction to Research	3
or	
EDUC 502 Introduction to Research	3
or	
NURS 544 Quantitative Research in Health Care	3
Students must complete both of these courses:	
AHPH 691 Research in Physiology	3
MATH 502 Applied Statistics	3

► Electives (15 credit hours)

Students must complete 15 credit hours chosen from the following:

	Credits
AHPH 512 Strength Training Techniques and Program Design....	3
AHPH 513 Exercise and Strength Training for Rehabilitation	3
AHPH 514 Muscle Physiology, Adaptations to Training and Supplements	3
AHPH 515 Applied Strength Conditioning	3
AHPH 537 Emergency Procedures for Cardiovascular Life Support	3
AHPH 544 Pharmacological Aspects of Clinical Physiology	3
AHPH 545 Cardiopulmonary Aspects of Physiology	3
AHPH 546 Human Development and Aging in Populations with Chronic Disease	3
AHPH 562 Trends and Issues in Physiology	3
AHPH 590 Selected Topics in Applied Health Physiology	3
AHPH 692 Applied Health Physiology Internship I.....	3
AHPH 693 Applied Health Physiology Internship II	3

MASTER OF SCIENCE IN GEOGRAPHIC INFORMATION SYSTEMS MANAGEMENT

Department of Geography and Geosciences
www.salisbury.edu/geography/msgism/index.html

Dr. Michael S. Scott, Program Director
410-543-6456

The Master of Science in geographic information systems (GIS) management is designed to provide a theoretical and applied experience in administering and managing a GIS in a government, business or non-profit organization. To this end, the program also focuses on enhancing the GIS proficiency of professionals working in these areas to support their management objectives. With such experience, these professionals will be well equipped to fully integrate and advance the use of this new technology in their work environments.

This master's program is targeted at working professionals who could not or did not acquire an in-depth GIS background as part of their primary training and yet are expected to interact with GIS professionals and technicians as part of their job. The program is designed to meet students' needs while they continue to hold their professional position. Thus, the great majority of the program is offered online. Only a short residency is required for a four-week summer session in June.

► Admission

Admission to the Master of Science in geographic information systems management (GISM) requires that the Application for Graduate Program Admission, application fee, transcripts from all colleges attended and Residency/Domicile Information form (if applying for in-state tuition as a Maryland resident) be submitted to the Office of Admissions. When the application and required transcripts arrive in the Office of Admissions, the application files are sent to the M.S. GISM program coordinator for admission consideration. Applicants must also submit an application directly to the M.S. GISM program with the following requirements:

1. An official transcript as evidence of completion of an earned baccalaureate degree from an accredited institution
2. Successful completion of undergraduate coursework in mathematics (college-level algebra or above) and elementary statistics
3. A professional resume showing:
 - a. At least two years of management or technical experience working in a professional capacity in business, government or non-government organizations
 - b. Knowledge of and recent (within the last three years) professional experience using GIS software, demonstrated by
 - i. At least one year or more of professional GIS experience or
 - ii. At least two semesters of geographic information science courses or
 - iii. Some combination of professional GIS experience and formal coursework
4. Three academic and/or professional recommendations addressing the applicant's qualifications to do graduate work
5. A personal statement of about 500 words that describes the applicant's goals related to the pursuit of this graduate program of study and to his/her overall career.

6. Fulfillment of the University requirements for international students as outlined in this catalog.

► Provisional Admission

Students without significant professional experience may be admitted provisionally if they have had an internship involving public administration experience, and/or have completed some combination of upper-division or graduate-level courses in human geography, land-use planning, GIS, public administration, business administration or government. Students seeking provisional admission are expected to submit acceptable results from the Graduate Record Examination (GRE). If the applicant does not meet the GIS experience requirement, they may be admitted provisionally and be required to make up the deficiency by completing leveling courses.

Provisionally admitted students who complete GEOG 519 and POSC 540 with no grade below a B are converted to full admission status.

► Program of Study

The Master of Science in GIS management requires the completion of at least 34 credit hours, of which at least 21 credit hours are earned at Salisbury University. The program must be completed with a cumulative average of a B (3.0) or higher, with no more than six credit hours below a grade of B and no grade lower than a C. The curriculum has a common set of core courses (25 credit hours) and allows for elective courses in professional areas of specialization (at least nine credit hours).

The master's degree program can be completed in 13 months with full-time study. Part-time study leading to the degree is also available. All courses except for GEOG 519 and POSC 540 are offered online only. The program is designed to have students in residence in Salisbury for an initial four-week summer session and the rest is to be completed remotely.

Courses in technology management (TMAN) are offered online to SU students by the University Maryland University College (UMUC). TMAN courses are taken via inter-institutional registration (see the "Inter-Institutional Registration" section of the Graduate Student Information chapter of this catalog for more information) and are treated as credits earned at SU. Upon entering the M.S. GISM program, students work closely with the program director to identify which electives meet their educational goals and are guided through the inter-institutional registration process.

Program requirements are as follows:

1. Complete the following 25 credit hours:

	Credits
GEOG 519 Advanced Geographic Information Science	4
POSC 540 Public Administration	3
INFO 686 Database Processing and Management	3
GEOG 619 Managing GISystems	3
GEOG 630 GISystems and Public Administration	3
GEOG 640 GISystems Co-operative Experience	6
GEOG 650 Capstone GISystems Seminar	3

2. Complete nine credit hours in elective courses chosen from the following:

	Credits
INFO 615 Project Management	3
GEOG 550 Topics in Geography: Leadership in GIS Organizations	3
TMAN 611 Principles of Technology Management	3
TMAN 614 Strategic Management of Technology and Innovation	3
TMAN 625 Economics and Financial Analysis for Technology Managers	3
TMAN 632 Organizational Performance Management	3
TMAN 633 Managing People in Technology Organizations	3

MASTER OF SCIENCE IN MATHEMATICS EDUCATION

Department of Mathematics and Computer Science and
 Department of Education Specialties
www.salisbury.edu/mathcosc/GradPrograms

Dr. Jennifer Bergner, Program Director
 410-677-5429
 Dr. Randall E. Groth, Education Specialties Liaison
 410-677-5061

The Master of Science in Mathematics Education (M.S.M.E.) is a professional degree offered cooperatively by the Department of Education Specialties and the Department of Mathematics and Computer Science. The program is designed for candidates seeking advanced preparation in the teaching of mathematics in the middle and secondary schools. The curriculum includes fundamental, theoretical and practical experiences within mathematics and education. The M.S.M.E. program promotes continuing professional development and lifelong learning for teachers and mathematics education leaders. This is consistent with the recognition that capable and confident mathematics educators are necessary for all levels of mathematics instruction.

General objectives are as follows:

1. Provide candidates with an opportunity for personal and professional growth through graduate study in mathematics and in education.
2. Provide mathematics classroom teachers and mathematics educational specialists with an opportunity to develop and improve competencies in mathematics and mathematics education.
3. Provide mathematics educators with an opportunity for additional preparation needed for professional development and career advancement.

► Admission

Candidates who indicate on their application for graduate program admission form that they wish to pursue the Master of Science in Mathematics Education (M.S.M.E.) will be assigned an advisor in the Mathematics and Computer Science Department and an advisor in the Education Specialties Department and will receive M.S.M.E. application materials. Admission to the M.S.M.E. at SU requires an application for graduate program admission, the application fee, official transcripts from all colleges and universities attended. The Residency/Domicile Information form (if applying for in-state tuition as a Maryland resident) must be submitted to the Office of Admissions. The following additional application documents and requirements specified by the two collaborating departments must be sent to the Department of Mathematics and Computer Science:

1. Submit a written description of the reasons for pursuing graduate study in mathematics education and a statement of career goals within the discipline.
2. Submit two letters of recommendation supporting the ability to succeed in graduate study.
3. Complete and submit a plan of study signed and approved by the advisor.

4. Possess an undergraduate cumulative GPA of 2.75 or a previously completed master's degree from a regionally accredited institution of higher learning.

Following the review of these materials, the program director formally notifies candidates of admission or denial into the program.

Questions regarding the applicability of courses taken as a non-degree graduate student will be resolved by the two collaborating departments' graduate program directors.

► Provisional Admission

Candidates who have submitted all application materials but have not obtained a 2.75 cumulative grade point average upon the completion of baccalaureate degree may be admitted on a provisional basis. Provisionally admitted candidates must complete nine credit hours of graduate study at SU with no grade below B.

Upon successful completion of nine credit hours candidates may apply for full admission to the M.S.M.E. program. Following the review of application materials, the program director formally notifies candidates of admission or denial into the program.

Candidates who do not meet the provisional admission of achieving nine credit hours with grades of B or above are not eligible to apply for admission into the M.S.M.E. program.

To assist candidates who are provisionally admitted, an advisor will be assigned. Candidates are expected to meet with their advisors to clarify program requirements and to assure that courses for which they register will be appropriate for their programs of study.

► Program of Study

Prior to admission to the M.S.M.E. program and registration for courses, it is the candidate's responsibility to become familiar with the program requirements and to confer with assigned faculty advisors to develop programs of study. The program of study identifies core courses, courses in the specific tracks the candidate will follow, recommended electives and the intended capstone experience. Advisors must approve candidates' programs of study. Program changes must also be approved by advisors.

► Course Requirements

Candidates seeking the M.S.M.E. at Salisbury University must complete an approved program of study including at least 33 semester hours of graduate credit (a minimum of 24 hours completed at SU) with a cumulative GPA of 3.0 or higher, with no grade lower than a C, and no more than six credit hours of C or C+.

The M.S.M.E. program consists of 12 semester hours of education courses, 12 hours of mathematics courses in either the Middle School Track or High School Track, six hours of electives and three hours in a capstone experience.

► Education Courses (12 semester hours)

The curriculum is planned to emphasize mathematical teaching and learning within a context of research, scholarship and practice. Required courses are:

	Credits
EDUC 502 Introduction to Research	3
EDUC 504 Diversity in a Democracy	3
EDUC 545 Learning and Instruction	3
EDUC 506 Seminar in Teaching Mathematics	3

► **Tracks**

In addition to completing the courses in education, M.S.M.E. students select either the Middle School Track or the High School Track. The candidate must complete the required mathematics courses for the track chosen. The required courses in both tracks are linked to the core learning goals in algebra, geometry and data analysis.

Middle School Track

(12 semester hours required)

Complete the following:

	Credits
MATH 545 Conceptual Algebra for Teachers	3
or	
MATH 555 The Cartesian Triad	3
(departmental approval required)	
and	
MATH 566 Geometry: From Euclid to Modern Day	3
MATH 503 Data Analysis	3
and	
MATH 501 Number Theory from a Multicultural and Historical Perspective	3
or	
MATH 565 Mathematical Modeling for Middle School Teachers ..	3

High School Track

(12 semester hours required)

Complete all of the following:

	Credits
MATH 507 Seminar: Algebra	3
MATH 508 Seminar: Geometry	3
MATH 500 Foundations of Number Theory	3
MATH 502 Applied Statistics	3

► **Electives (6 semester hours)**

The two elective courses may be taken from the graduate offerings in education, mathematics or science. See graduate advisors for recommended electives for each track. Recommended electives are listed on the checklist for the program.

► **Capstone Courses (3 semester hours)**

All candidates for the M.S.M.E. will complete a capstone experience.

	Credits
EDUC 595 Research Seminar: Mathematics Education	3

MASTER OF SCIENCE IN NURSING

Department of Nursing

www.salisbury.edu/nursing/SalisburyNursing.html

Dr. Mary T. Parsons, Program Director

410-543-6420

Graduate education in nursing builds upon generalized preparation at the undergraduate level and previous experience in nursing. Graduate nursing education provides advanced preparation and knowledge in specialized areas of nursing. Salisbury University offers a master's program with tracks preparing students for roles as health care leaders, clinical nurse educators and family nurse practitioners.

Students seeking the Master of Science in nursing must complete an approved program of study, including 36-45 semester hours of graduate credit.

All graduate nursing students must complete a core of

courses that prepares them for evidence-based advanced nursing practice. Core courses include Epidemiology (NURS 515), Qualitative Research (NURS 542), Quantitative Research (NURS 544), Advanced Statistics (MATH 502) and completion of a capstone/thesis/internship requirement. Each track then has additional required courses specific to the track.

Master of Science Program

► **Admission**

Admission to the Graduate Nursing Program is a two-step process:

1. Admission to the University, and
2. Admission to the Nursing Department.

Applicants are required to submit an Application for Graduate Program Admission, application fee, transcripts from all colleges attended and Residency/Domicile Information form (if applying for in-state tuition as a Maryland resident) be submitted to the Office of Admissions. When the application and required transcripts arrive in the Office of Admissions, the application file will be sent to the graduate nursing program director for admission consideration. Students must also submit an application to a graduate nursing track with the following additional application documents and requirements:

- A. An official transcript as evidence of completion of a National League for Nursing or a Commission on Collegiate Nursing Education accredited baccalaureate degree (or associate's degree for RN to M.S. students) program in nursing.
- B. A minimum cumulative grade point average of 3.0 on a 4.0 scale on all previous college/university courses. Applicants with an otherwise strong application, but a cumulative GPA of less than 3.0 may be considered.
- C. A one-to-two narrative essay describing academic and professional goals.
- D. A current curriculum vitae/resume.
- E. Two academic or professional recommendations addressing potential graduate study in nursing.
- F. Fulfillment of the University requirements for international students as outlined in this catalog.
- G. Completion of personal interview with director of Graduate and Second Degree Programs or other member of the Graduate Program Committee.

► **Nursing Enrollment/Program Requirements**

After acceptance into the nursing program and prior to beginning the program, students must provide documentation of the following:

1. Students in health care professions must meet certain requirements for regular physical examinations and provide evidence of immunity from communicable diseases in conformity with the recommendations for Health Care Workers provided by the Centers for Disease Control. These recommendations are subject to change. Details and updated requirements are available on the departmental Web site.
2. Due to changing clinical site and agency regulations, SU students who accept admission to the nursing program may be asked to undergo a criminal background check in order to participate in some clinical rotations. It is highly possible that in the near future all students will have to undergo criminal background checks for some or all clinical

experiences. The Department of Nursing will provide information for students as it becomes available and it will be the students' responsibility to have the background checks completed.

3. Current certification in cardiopulmonary resuscitation (CPR) by the American Heart Association or the American Red Cross. The course must be one designed for a health care provider, such as the AHA's module C course and it must require a personal skills check-off.
4. Evidence of current RN licensure in the state of Maryland or a compact state.

► Progression Requirements

Master's students in the Department of Nursing must achieve a grade of B or better in nursing courses that are considered to be practicum courses. These courses include: NURS 511, NURS 516, NURS 558, NURS 559, NURS 562, NURS 572 and NURS 574. In graduate courses that are not practicum courses, the student may receive no more than one grade below a B. Students who receive a grade lower than a B in any course may repeat one course one time in order to achieve a better grade. Students whose cumulative grade point average falls below a 3.0 in any semester will be placed on academic probation according to University policy.

Students must also:

1. Maintain a valid license as a registered nurse in the state of Maryland or a compact state. If a clinical site is in a non-compact state, additional R.N. licensure for that state is necessary.
2. Maintain current clinical and health requirements.

► Program of Study

A minimum of 36-45 semester hours is required in the prescribed sequence according to the track selected for the master's degree. Depending on the track selected, a minimum 21 of these semester hours must be completed at SU. Preparation for advanced practice roles is offered in the following tracks: health care leadership (HCLD), family nurse practitioner (FNP) and clinical nurse educator (CLED). Successful completion of the requirements of one of these tracks makes the student eligible to apply for national certification examinations.

The time required for completion of the master's-level program depends on the individual students' course load, the selected academic track and the course-offering rotation schedule. Generally, the master's degree can be completed in two to three academic years. Part-time or full-time options are available for most semesters. The master's curriculum is comprised of core courses, taken by students in all tracks, and specialty courses, depending on the selected track.

Requirements are as follows:

1. All M.S. nursing students must complete the following courses:

	Credits
NURS 515 Epidemiology	3
NURS 542 Qualitative Research in Health Care	3
NURS 544 Quantitative Research in Health Care	3
MATH 502 Applied Statistics	3
NURS 590 Thesis	3
or	
NURS 592 Internship	3
or	
NURS 593 Capstone I: Proposal	1
and	
NURS 594 Capstone II: Implementation	1
and	
NURS 595 Capstone III: Dissemination	1

2. Complete the required courses in one of three specific graduate nursing tracks.

RN to Master's (No Previous Bachelor's Degree)

The RN to master's program is for RN students wishing to pursue a master's degree in nursing in the family nurse practitioner, clinical nurse educator or health care leadership track. The prerequisite for enrollment in this program is an active unencumbered Maryland or compact RN license. Upon admission to the nursing major at Salisbury University, students may receive up to 60 academic transfer credits from their associate degree program. After completing all non-nursing requirements for RN to M.S. students and 12 of the 18 nursing credits required, students having a GPA of 2.75 or greater may apply to the graduate nursing program. If accepted, and after completion of the remaining six required nursing credits, students will take the 12 credits of graduate core courses (rather than 12 credits of SU nursing and non-nursing electives) and then continue with the courses in the specialty track they have selected. Upon completion of their graduate program, students are awarded 30 additional credits based on their active unencumbered Maryland or compact license and will receive a Master of Science in nursing. The RN to master's program provides the RN wishing to have a graduate nursing degree with a 12-credit efficiency over the more traditional route where the B.S. and M.S. in nursing are pursued separately.

► Non-Nursing Requirements

Refer to the RN-to-M.S. checklist for the additional non-nursing requirements. The checklist is available from the Nursing Department and on its Web site.

► Required Nursing Courses

RN to master's students are required to complete the following courses(18 credits):

	Credits
NURS 319 Health Assessment (fall).....	3
NURS 329 Research Methods (spring)	3
NURS 430 Community Health Nursing (fall and spring)	3
NURS 431 Community Health Nursing Practicum (fall and spring).....	3
NURS 440 Senior Seminar (spring)	3
and	
NURS 441 Internship (spring).....	3
or	
NURS 442 Nursing Leadership and Management (fall)	2
and	
NURS 443 Nursing Leadership Practicum (fall)	2
and	
NURS 490 Independent Study (fall and spring)	2

► Graduate Nursing Core Courses

RN to master's students who have been accepted into the graduate program complete the following core graduate courses:

	Credits
NURS 515 Epidemiology (fall)	3
NURS 542 Qualitative Research in Health Care (fall)	3
NURS 544 Quantitative Research in Health Care (fall)	3
MATH 502 Applied Statistics (fall)	3
NURS 590 Thesis	3
NURS 592 Internship	3
or	
NURS 593 Capstone I: Proposal	1
and	
NURS 594 Capstone II: Implementation	1
and	
NURS 595 Capstone III: Dissemination	1

► **Graduate Nursing Track**

Complete required courses in one of the three specific graduate nursing tracks.

Graduate Nursing Tracks

► **Health Care Leadership***

* This track is offered as a cohort program with a minimum of 10 students, starting in the fall semester only.

	Credits
NURS 525 Health Care Systems	3
NURS 526 Health Care Informatics	3
NURS 561 Health Care Management Seminar	3
NURS 562 Health Care Management Practicum	3
NURS 571 Health Care Leadership Seminar	3
NURS 572 Health Care Leadership Practicum	3
XXXX XXX Graduate-level Elective	3

► **Family Nurse Practitioner ***

This track is offered as a cohort program with a minimum of 10 students, starting in the fall semester only.

	Credits
NURS 510 Advanced Health Assessment: Didactic.....	3
NURS 511 Advanced Health Assessment for Advanced Practice Nurses: Clinical Practicum	2
NURS 514 Issues in Advanced Practice Nursing.....	3
NURS 516 Family Nursing	4
NURS 522 Pharmacotherapeutics	3
NURS 558 Adult Health Care Management.....	6
NURS 559 Women and Children's Health Care Management.....	6
NURS/BIOL 552 Advanced Human Physiology/ Pathophysiology	3

* A minimum of 600 precepted clinical hours is required for the FNP student.

► **Clinical Nurse Educator**

	Credits
EDUC 560 College Teaching	3
NURS 510 Advanced Health Assessment: Didactic.....	3
NURS 522 Pharmacotherapeutics	3
NURS/BIOL 552 Advanced Human Physiology/ Pathophysiology	3
NURS 573 Technology in Health Care Education	3
NURS 574 Clinical Nurse Educator Practicum.....	5

DOCTOR OF NURSING PRACTICE

Department of Nursing

Dr. Mary T. Parsons, Program Director
410-543-6420

The Doctor of Nursing Practice (D.N.P.) Program addresses the growing need for doctorally prepared nurses in advanced practice roles. Graduates of this program will have specialized skills for managing the increasingly complex health care needs of the region in a cost-effective and collaborative manner. The curriculum emphasizes the use of research and technology to enhance health care and improve outcomes. Students will learn to analyze healthcare systems and integrate evidence-based practice throughout all layers of care. D.N.P. graduates will be employed at the highest level of nursing practice, working with individuals, groups or organizations, and will serve as leaders in health care for the region.

Post-Master's Option

The D.N.P. Program is offered in a cohort sequence as a 38-credit post-masters option for students in advanced practice roles, including nurse practitioners, clinical nurse specialists, nurse midwives, nurse anesthetists, nurse administrators and nurse educators. Since the program is designed for working professionals, candidates may complete the degree in three years, taking six credits per semester. Students who join the program after the cohort begins or take fewer courses per semester will take slightly longer to finish. Students who do not already hold national certification as an Advanced Practice RN may need to take additional credits and will meet with the director of the Graduate Nursing Program for an individualized curriculum plan. All students must have completed at least 1,000 clinical hours between the master's and D.N.P. programs.

► **Admission to the Post-Masters D.N.P. Program**

Admission to the D.N.P. Program requires acceptance to the University for graduate study as well as acceptance into the D.N.P. Program. Admission to the D.N.P. Program is a competitive process, and the following required items will be considered individually as the final applicant selections are made.

- Official transcripts from all colleges and universities attended
- M.S. in nursing from a nationally accredited program (applicants with other M.S. degrees may be considered on an individual basis, but must be able to demonstrate a significant concentration in nursing)
- Current and active United States Registered Nursing (RN) license
- Eligibility for / or current national certification in an Advanced Practice Role
- GPA of 3.5 (on a 4.0 scale) for graduate degree; applicants with GPA 3.0-3.5 and a compelling application packet may be considered on an individual basis
- Minimum grade of B or better in the following **graduate-level** prerequisite courses:
 - Statistics (within the last five years)
 - Pathophysiology
 - Pharmacology
 - Physical Health Assessment
- Current CPR Certification for healthcare providers
- Current resume or curriculum vitae
- Three professional references / letters of recommendation
- Interview with graduate program director or department chair
- A 500- to 1,000-word essay outlining why the D.N.P. is important to the applicant, as well as their personal goals, objectives and focused area of interest in pursuing the D.N.P.
- Residency/Domicile Information form (for those students applying for in-state tuition)
- Documents required of international students: please consult the Center for International Education at www.salisbury.edu/intled/ISS/admissions
- Proficiency in spoken and written English with the following minimum TOEFL scores: 550 for the paper-based examination, 213 for the computer-based examination and 80 for the Internet-based examination

► Post-Master’s Program Requirements

The Post-Masters D.N.P. Program consists of 38 credit hours of graduate work (for nationally certified Advanced Practice Nurses), which may be completed over approximately three years. (Credits may vary for students who are not already certified as Advanced Practice Nurses.) Direct and indirect care options will be available for the specialty practice-hours component, as determined by the student and faculty advisor based on the career goals and aspirations of the student. Students interested in applying their practice hours to improving the care of individuals may complete clinical time at a primary care facility or a practice management site. Other students may wish to complete their specialty hours at a hospital or community health center, focusing on a broader application for improvement of patient healthcare outcomes. One thousand total clinical hours are required for all D.N.P. students, which includes the clinical hours obtained during their master’s program. Graduate students must maintain at least a 3.0 GPA (4.0 scale) with a maximum of one C, and no grades lower than a C.

► Post-Master’s Curriculum

The D.N.P. curriculum is a blend of new and existing courses at Salisbury University, incorporating inter-departmental course work designed to address the varied educational needs of the D.N.P. students, and to meet the D.N.P. Essentials (AACN, 2006). Twenty-seven credit hours in nursing, finance and political science comprise the core of the curriculum, with another eight credit hours relating directly to the D.N.P. project and practicum coursework taken toward the end of the program. Additionally, a three-credit graduate elective chosen by the student with the approval of his or her advisor is used to supplement the core of required courses and is tailored to student interests.

PLEASE NOTE: A personalized plan of study, incorporating the requisite 1,000 clinical hours, will be designed for each student based on their previous experience and the focus of their D.N.P. studies. The total credits required for their program may vary, depending on each individual’s previous master’s level clinical hours, and will be determined on an individual basis.

Required courses are as follows:

	Credits
Fall One	
NURS 526 Informatics	3
NURS 744 Evidence-Based Practice	3
Spring One	
NURS 525 Health Care Systems	3
POSC 580 Leadership and Public Administration	3
Summer One	
XXX Approved Elective.....	3
Fall Two	
NURS 561 Health Care Management	3
NURS 742 Quality Improvement in Healthcare	3
Spring Two	
FINA 535 Health Care Finance	3
NURS 891 D.N.P. Evidence-Based Project I: Identification and Development	2
Summer Two	
XXX Approved Elective.....	3
Fall Three	
NURS 815 Genetics and Genomics in Healthcare.....	3
NURS 892 D.N.P. Evidence-Based Project II: Implementation	1
NURS 894 D.N.P. Evidence-Based Practicum.....	1-3*

Spring Three

NURS 858 Health Promotion and Clinical Prevention	3
NURS 893 D.N.P. Evidence-Based Project III: Evaluation and Dissemination	1
NURS 894 D.N.P. Evidence-Based Practicum.....	1-3*
TOTAL CREDITS: 38**	

* A minimum of four credits of Practicum are required, with 400 hours. This course can be taken for variable 1-3 credits (100-400 hours) in at least two different areas of focus and with advisor’s approval.

** Students ultimately must have 1,000 total clinical hours and may need to take additional credits if they had fewer than 600 clinical hours in their M.S. program. Program plans will be individually determined between the student and the director of the graduate program.

POST-BACCALAUREATE CERTIFICATE IN HEALTH CARE MANAGEMENT

This certificate program is for students who have already completed a bachelor’s degree in any discipline and are now seeking to complete the requirements for the Health Care Management Certificate.

This program is offered on a cohort basis, and interested students must contact the Department of Nursing for additional program information.

The following courses are required:

	Credits
NURS 525 Health Care System	3
NURS 526 Health Care Informatics	3
NURS 561 Health Care Management Seminar	3

Students are also required to complete one of the following electives:

	Credits
NURS 515 Epidemiology	3
NURS 542 Qualitative Research in Health Care	3
NURS 562 Health Care Management Practicum	3
MATH 502 Applied Statistics	3
or	
NURS 544 Quantitative Research in Health Care	3

POST-BACCALAUREATE CERTIFICATE IN MIDDLE SCHOOL MATHEMATICS

PLEASE NOTE: The Post-Baccalaureate Certificate in Middle School Mathematics Program has been temporarily suspended. The status of the program is being examined. New students will not be admitted into the program during the period of suspension.

The Certificate in Middle School Mathematics (C.M.S.M.) is a certificate in middle-school mathematics. This certificate is designed for school personnel seeking advanced study in mathematics content appropriate for teaching mathematics at the middle-school level.

For admission to the certificate program, candidates must possess a bachelor's degree with a 2.75 minimum grade point average in undergraduate work, or possess a higher degree, and hold a teaching certificate in a specified subject area. For admission consideration, students must submit the following documentation: To Admissions, an application, application fee and official transcripts from every college and university attended; To the Department of Mathematics and Computer Science, an application for admission to the M.S. program in mathematics education, two letters of recommendation supporting the applicant's ability to succeed in graduate study, and a completed plan of study signed by a program advisor.

Note: This certificate is not a teaching certificate. The award of this certificate does not carry certification to teach.

Course Requirements

Candidates seeking the C.M.S.M. must complete at least four of the following courses:

	Credits
MATH 501 Number Theory from a Historical Perspective	3
MATH 503 Data Analysis	3
MATH 510 Mathematical Reasoning	3
MATH 520 Middle School Mathematics in a Teaching Context with Instructional Technology	3
MATH 541 Conceptual Algebra for Teachers	3
MATH 555 The Cartesian Triad: Algebra, Geometry and Coordinates in the Plane	3
MATH 565 Mathematical Modeling for Middle School Teachers ..	3
MATH 566 Geometry: From Euclid to Modern Day	3