

Richard A. Henson

# Henson School of Science and Technology

**Dr. Michael S. Scott, Interim Dean**  
**Dr. Robert L. Joyner Jr., Associate Dean**

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**Kristen A. Paul, STEM Coordinator**  
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## Majors & Minors

### Bachelor of Science

- Biology
  - Dual Degree: Biology and Environmental Science
- Chemistry
- Computer Science
- Earth Science
- Geography
- Mathematics
- Medical Laboratory Science
- Nursing
- Physics
  - Dual Degree:
    - Engineering Transfer
    - Respiratory Therapy
    - Urban and Regional Planning

### Minors

- Actuarial Science
- Biology
- Chemistry
- Clinical Biochemistry
- Clinical Hematology
- Clinical Microbiology
- Computer Science
- Earth Science
- Geographic Information Science
- Geography
- Mathematics
- Physics
- Statistics
- Transfusion Services/Blood Bank
- Urban and Regional Planning

### 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

### Post-Doctorate of Nursing Practice Certificate of Completion: Family Nurse Practitioner



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**School Information**

The mission of the Richard A. Henson School of Science and Technology is to provide an outstanding student-centered learning environment in which expert faculty empower students with knowledge and skills in the sciences, mathematics, engineering and health-related disciplines. The Henson School prides itself in recruiting diverse faculty and students and providing a highly collaborative environment in the classroom, laboratory, field and clinical settings. Additionally, the Henson School collaborates with employers and post-graduate institutions in order to support successful career pathways for its graduates. 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, healthcare, 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](http://www.salisbury.edu/biology)

**Majors: Biology, Biology and Environmental Science (dual degree with UMES)**

**Minors: Biology**

**Graduate: M.S. Applied Biology**

**(See "Undergraduate Minors" section for details.)**

#### Chair

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

#### Associate Chair

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

#### 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  
Stephen C. Gehrlich, Ph.D.; Tufts University  
Samuel Geleta, Ph.D.; Oklahoma State University  
Mark A. Holland, Ph.D.; Rutgers University  
Kimberly L. Hunter, Ph.D.; University of Nevada Las Vegas  
Judith M. Stribling, Ph.D.; University of Maryland  
Ryan C. Taylor, Ph.D.; University of Louisiana-Lafayette  
E. Eugene Williams, Ph.D.; Arizona State University

#### Associate Professors

Patti T. Erickson, Ph.D.; University of California, Berkeley  
Aaron S. Hogue, Ph.D.; Northwestern University  
Victor A. Miriel, Ph.D.; Old Dominion University  
Dana L. Price, Ph.D.; Ph.D., Rutgers University

#### Assistant Professors

Philip D. Anderson, Ph.D.; Case Western Reserve University  
Christina J. Bradley, Ph.D.; University of Hawaii Manoa  
Michael Carter, Ph.D.; The Ohio State University  
Jessica Kennett Clark, Ph.D.; Florida State University  
Jeremy R. Corfield, Ph.D.; University of Auckland  
Eric Liebgold, Ph.D.; University of Virginia  
Jennifer F Nyland, Ph.D.; State University of New York  
Upstate Medical University

#### Visiting Assistant Professor

Kim Quillin, Ph.D.; University of California Berkeley

#### Teaching Post-Doctoral Fellow

Hillevi Ets, Ph.D.; Drexel University College of Medicine

#### Post-Doctoral Fellow

Megan Murphy, Ph.D.; University of Missouri-Columbia

#### Senior Lecturers

Claudia Morrison-Parker, Ph.D.; Indiana University  
Wanda Perkins, M.S.; Salisbury University  
Betty Lou Smith, Ph.D.; University of Maryland College Park

#### Lecturers

Roie L. Cordrey, M.S.; Salisbury University  
Krispen L. Laird, M.S.; Salisbury University  
Kumudini Munasinghe, Ph.D.; University of Maryland Eastern Shore

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 science. The department's mission is threefold:

1. Assist students majoring in biology and associated health disciplines and environmental 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](http://www.salisbury.edu/chemistry)

**Major: Chemistry**

**Minor: Chemistry**

(See "Undergraduate Minors" section for details.)

### Chair

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

### Associate Chair

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

### Professors

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

Katherine Miller, Ph.D.; Washington University

### Associate Professors

Anita Brown, Ph.D.; University of Delaware

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

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

### Assistant Professors

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

José Juncosa, Ph.D.; Purdue University

David Keifer, Ph.D.; Indiana University Bloomington

Joshua Sokoloski, Ph.D.; Pennsylvania State University

Lena Woodis, Ph.D.; University of Wisconsin Madison

### Senior Lecturer

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

### Lecturers

Brent Alogna, B.S., Salisbury University

Jameson Brinck, 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](http://www.salisbury.edu/geography)

**Majors: Earth Science, Geography,  
Urban and Regional Planning**

**Minors: Earth Science, Geographic Information  
Sciences, Geography,  
Urban and Regional Planning**

(See "Undergraduate Minors" section for details.)

**Upper-Division Certificate: Geographic Information  
Science Fundamentals**

**Graduate: M.S. GIS Management**

### Chair

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

### Associate Chair

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

### Professors

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

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

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

Fulbert Namwamba, Ph.D.; Iowa State University

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

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

### Associate Professors

Gina Bloodworth, Ph.D.; Pennsylvania State University

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

Stuart E. Hamilton, Ph.D.; University of Southern Mississippi

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

### Assistant Professors

Thomas Cawthern, Ph.D.; University of New Hampshire

Craig A. Ramseyer, Ph.D.; University of Georgia

### Lecturers

Keota Silaphone, M.S.; University of Cincinnati

Vanessa Smullen, M.S.; The Johns Hopkins University

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 and urban and regional planning. 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.

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## HEALTH SCIENCES

[www.salisbury.edu/healthsci](http://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 Diane L. Davis, Ph.D., MLS(ASCP)<sup>CM</sup> SLS<sup>CM</sup> SC<sup>CM</sup>  
(Medical Laboratory Science Program Director);  
The Catholic University of America

### Professors

Robert L. Joyner, Ph.D., RRT, RRT-ACCS, FAARC  
(Respiratory Therapy Program Director); Dartmouth College  
Sidney Schneider, Ph.D., RRT-NPS, RPFT, ACSM-CEP;  
University of Maryland College Park

### Associate Professor

Thomas K. Pellinger, Ph.D., ACSM-RCEP, ACSM-EP-C;  
University of Oregon

### Assistant Professor

Carlton R. Insley III, Ph.D., RRT, RRT-NPS, RPFT, RRT-ACCS; (Applied  
Health Physiology Program Director); University of Nevada - Las Vegas

### Clinical Assistant Professor

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

### Medical Directors

Robert Chasse, M.D. (Consulting Faculty, Respiratory Therapy);  
Eastern Virginia Medical School  
Eric Weaver, M.D., Ph.D. (Consulting Faculty, Medical Laboratory  
Science); Thomas Jefferson University, Jefferson Medical College

### Instructors

Christina Camillo, M.S., MLS(ASCP)<sup>CM</sup>;  
University of Maryland at Baltimore  
Meghan East, M.S.P.A.S., PA-C, MLS, (ASCP)<sup>CM</sup>, Towson University  
Thomas W. Lamey, M.Sc., RRT, AE-C; University of South Alabama

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.

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## Undergraduate Program in Medical Laboratory Science

A Bachelor of Science from Salisbury University in medical laboratory science (MLS) prepares students to perform and supervise others performing laboratory analyses used in the diagnosis, prognosis and treatment of disease, as well as the maintenance of health. One study showed that up to 70 percent of all medical decisions are leveraged by laboratory results, so the employment future in this field is bright. Although many graduates enter healthcare, the high skill level of MLS graduates makes them ideal candidates for employment in a diversity of settings and for graduate education in a broad spectrum of areas related to healthcare and 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, informatics, health care administration (infection control, health promotion, laboratory consultation) and public health (epidemiology, crime laboratory science, Peace Corps). Many graduates continue education in widely varied programs, including medicine, physician assistant, pathologist assistant, pharmacy, forensics and other graduate programs related to laboratory specialties.

SU's program provides courses in basic math and science (statistics, chemistry and biology), General Education and specialized areas (microbiology, immunology, clinical biochemistry, hematology, transfusion services, urine/body fluid analysis, phlebotomy, lab safety and management). Computerization, mathematics, instrumentation and writing are integrated into the curriculum. Clinical internships in regional hospitals are capstone experiences in which students practice what they've studied to become competent practitioners. Students apply for positions in the spring of the sophomore year, and all prerequisite courses must be completed to enter the program. Therefore, students wishing to pursue the degree should seek academic advisement early to insure proper course sequencing.

The Bachelor of Science program is accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS, 5600 N. River Rd., Suite 720, Rosemont, IL 60018, 847-939-3597). Graduates are eligible to take certification examinations offered by various national organizations such as the American Society for Clinical Pathology (ASCP). Statistics regarding pass rates on certification exams, student attrition and graduate placement are maintained on the program website ([www.salisbury.edu/healthsci/medtech](http://www.salisbury.edu/healthsci/medtech)).

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## 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](http://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 Donald E. Spickler Jr., Ph.D.; University of Virginia

### Associate Chair

Associate Professor Veera Holdai, Ph.D., Wayne State University

### Professors

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

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

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

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

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

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

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

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

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

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

Melissa Stoner, Ph.D.; Lehigh University

### Assistant Professors

Joseph Anderson, Ph.D.; The Ohio State University

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

Randall Cone, Ph.D.; Virginia Polytechnic Institute and State University

Giulia Franchi, Ph.D.; University of Rome Tre

Alexander Halperin, Ph.D.; Lehigh University

Lisa Schneider, Ph.D.; University of California, Riverside

Ryan Shiffler, Ph.D.; Virginia Polytechnic Institute and State University

Yaping Jing, Ph.D.; Iowa State University

### Visiting Professor

Sarah Wesolowski, Ph.D.; The Ohio State University

### Senior Lecturers

Robert Barber, M.S.; American University

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

Carvel LaCurts, M.Ed.; Salisbury University

### Lecturers

Alfred Beebe, Ph.D.; University of Washington

Molly Ferretti, M.A., Stony Brook University

Erika Gerhold, M.S.; Louisiana State University

Theresa Manns, M.S.; Syracuse University

The Department of Mathematics and Computer Science offers programs leading to the Bachelor of Science in mathematics, including a concentration in statistics, to the Bachelor of Science in computer science and to the Master of Science in Mathematics Education. Also available are a track in actuarial science, a track in computational mathematical sciences 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 can be augmented to include a minor in mathematics with one additional course, emphasizes software development principles throughout the curriculum and prepares students for graduate study or for careers in computer science, software development or systems analysis.

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## NURSING

[www.salisbury.edu/nursing](http://www.salisbury.edu/nursing)

**Major: B.S. Nursing**

**Post-Baccalaureate Certificate:**

**Health Care Management**

**Graduate: M.S. Nursing,**

**Doctor of Nursing Practice,**

**Post-Doctorate of Nursing Practice Certificate**

**of Completion: Family Nurse Practitioner**

### Chair

Assistant Professor Jeffrey A. Willey, Ph.D.; University of Phoenix

### Associate Chair

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

### Professors

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

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

(Director of Graduate and Second Degree Programs)

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

### Associate Professors

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

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

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

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

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

Tina Brown Reid, Ed.D.; Wilmington College

### Assistant Professors

Erica A. Alessandrini, FNP-BC, D.N.P.; Wilmington College

Kimberly D. Allen, D.N.P.; Salisbury University

Kaynabess Freda, Ed.D.; University of Maryland Eastern Shore

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

Marguerite M. Russo, Ph.D., CRNP-F, ACHPN; University of Maryland at Baltimore

Nancy M. Smith, D.N.P., FNP-BC; University of Maryland at Baltimore

### Professors of Practice

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

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

### Instructors

Sedonna M. Brown, M.S.N.; Bowie State University

Nicole J. Hall, M.S.N.; Wilmington University

Jennifer Hart, M.S.; Salisbury University

Amanda J. Willey, M.S.; Salisbury University

### Lecturer

Teena Milligan, M.S.N.; Wilmington University

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 baccalaureate degree in nursing, master's degree in nursing, Doctor of Nursing Practice and post-D.N.P./FNP certification of completion at Salisbury University are accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, D.C. 20036, 202-877-6791.

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## PHYSICS

[www.salisbury.edu/physics](http://www.salisbury.edu/physics)

**Major: Physics**

**Minor: Physics**

**(See "Undergraduate Minors" section for details.)**

### Chair

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

### Associate Chair

Associate Professor Matthew Bailey, Ph.D.; Utah State University

### 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

Steve Binz, Ph.D.; Iowa State University

Jeffrey Emmert, Ph.D.; University of Virginia

Nicholas Troup, M.S.; University of Virginia

### Senior Lecturer

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

### Lecturer

Vanessa Smullen, M.S.; The Johns Hopkins University

The Physics Department offers a multi-track program of study, giving students the flexibility to pursue a challenging curriculum of inspiring courses best suited to their individual interests and chosen careers. A major in physics prepares students for careers in a variety of high-technology fields and teaching and/or further graduate studies in physics, engineering, medicine and other fields. Students can complete the physics major in one of five ways: general physics track, microelectronics track, secondary education track, engineering physics track or dual-degree engineering transfer program.

The Physics Department also provides undergraduate research opportunities to advance student understanding, allowing the student to apply the techniques in an active hands-on environment. With close faculty mentoring during the research experience, students gain skills necessary to organize and communicate scientific results and become successful science professionals. Virtually all physics majors become involved in scientific research under active faculty, R&D sector or industry supervision. Students have conducted research on a variety of topics including extragalactic elemental abundances, stellar evolution and supernovae, robotics design and building, alternative energies such as wind and solar, computational surface physics, biomedical physics, quantum mechanics, remote sensing, high-altitude balloon electronics, and a plethora of other topics.

# Undergraduate Majors

## BIOLOGY

Department of Biological Sciences

www.salisbury.edu/biology

Dr. Les Erickson, Chair

410-677-5366

To graduate with a degree in biology, students must complete the 27-credit biology core and at least 17 additional credits in BIOL, ENVS (at UMES) 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, and ENVS 403/405 (UMES).

### 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 I 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

5. 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 110 Human Biology .....	4
BIOL 150 Environmental Science: Concepts and Methods .....	4
BIOL 205 Fundamentals of Human Anatomy and Physiology .....	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

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 Core, 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 Program in Biology And Environmental Science

SU and UMES offer a dual-degree program in biology and environmental 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 310) as well as the following.

Students in this program take a minimum of 30 semester credit hours on the UMES campus, including at least 24 hours of designated BIOL/ENVS courses. Students shall not begin coursework at UMES until they have completed BIOL 210; BIOL 211, 212 or 213; 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. Approved courses for the biology major include ENVS 498 and 499.

1. Complete the following environmental science courses:

	Credits
ENVS 201(lec)/203(lab)* Marine Biology .....	4
ENVS 202(lec)/204(lab)* Oceanography .....	4
ENVS 221(lec)/222(lab)* Principles of Environmental Science ....	4
ENVS 403(lec)/405(lab)* Marine Ecotoxicology .....	4
DNSC 400* Senior Proficiency Exam .....	1
BIOL 401 Wetland Ecology.....	4

Complete one of the following:

BIOL 410 Estuarine Biology .....	3
BIOL 488* Marine and Estuarine Ecology .....	4

Complete one of the following:

BIOL 420 Independent Study .....	3
ENVS 498 Independent Study .....	3

Complete one of the following:

BIOL 415 Undergraduate Research .....	3
ENVS 499* Undergraduate Research .....	4
* offered at UMES only; C or better required	

2. Complete the following required related science 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
PHYS 121 General Physics I.....	4
PHYS 123 General Physics II .....	4
MATH 155 Modern Statistics with Computer Analysis .....	3
MATH 202 Calculus II.....	4

\* a C or better is required for CHEM 121 and CHEM 122 before taking any course for which they are a prerequisite as a requirement for graduation.

Complete one of the following:

MATH 198 Calculus for Biology and Medicine .....	4
MATH 201 Calculus I .....	4

Complete one of the following:

GEOG 104 Earth and Space Science.....	4
GEOG 105 Introduction to Physical Geography .....	4
GEOG 219 Map Analysis and Interpretation.....	4

NOTE: Because several courses are offered only in spring or fall, and because of other requirements of the program including a relatively large number of required credits,

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.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## CHEMISTRY

Department of Chemistry  
[www.salisbury.edu/chemistry](http://www.salisbury.edu/chemistry)

Dr. David Rieck, 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 Core, 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

\* 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 Chemical Engineering Transfer Track

This track provides a student an opportunity to earn both a degree in chemistry from SU and an engineering degree from the University of Maryland College Park (UMCP). In this track, typically students attend SU for three years and UMCP for two years (likely including the summer before the first fall semester).

While at SU, the student completes the chemistry core as well as additional courses identified here. Students also must complete all SU General Education requirements and at least 90 credit hours at SU. Students who transfer to SU must complete at least 60 credit hours of the track at SU.

To earn the degree from SU, the student must apply to and be accepted into the Chemical and Biomolecular Engineering Program at UMCP. Please note that completion of the SU requirements does not guarantee admission into the UMCP program. Additionally, please note that it is the student's responsibility to make certain that all prerequisites for the UMCP program are met.

In addition, to earn the degree from SU, as a student in the UMCP Chemical and Biomolecular Engineering Program, the student must complete at least 30 credit hours at UMCP, with at least 15 of these credit hours being chemical engineering (CHBE) courses with a grade of C or better. After completing the required courses at UMCP, if all other SU requirements have been met, the student may transfer credits to SU from UMCP and apply for graduation at SU.

Complete the following course requirements (in addition to the chemistry core and SU General Education requirements):

	Credits
CHEM 341 Physical Chemistry I .....	4
CHEM 342 Physical Chemistry II .....	4
CHEM 417 Biochemistry I .....	4
ENGR 100 Introduction to Engineering Design .....	3
ENGR 306 Introduction to MATLAB .....	1
MATH 310 Calculus III .....	4
MATH 311 Differential Equations I .....	4
PHYS 225 Physics III .....	3

## 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 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 216 Statistical Thinking .....	4
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 Principles of Microeconomics .....	3

## ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## COMPUTER SCIENCE

Department of Mathematics and Computer Science  
[www.salisbury.edu/mathcosc](http://www.salisbury.edu/mathcosc)

Dr. Don Spickler, Program Director  
 410-543-6145

The computer science major requires 18 courses (65-68 credits) arranged in four components:

- I. Mathematics Core for computer science (16 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 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 .....	4
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 420 High-Performance Computing .....	4
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 .....	4
COSC 490 Special Topics .....	3
COSC 495 Directed Consulting* .....	4
MATH 471 Numerical Methods** .....	4

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

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## EARTH SCIENCE

Department of Geography and Geosciences  
[www.salisbury.edu/geography](http://www.salisbury.edu/geography)

Dr. Brent Zaprowski, Program Director  
 410-543-6460

All courses applied to the major must be completed with grades of C or better. The Department of Geography and Geosciences recommends that the lower-division core courses (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
CHEM 121 General Chemistry I .....	4
GEOG 201 Weather and Climate .....	4
GEOG 204 Statistical Problem Solving in Geography .....	4
GEOG 219 Map Interpretation and Analysis .....	4
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
GEOL 313 Mineralogy and Optical Petrology .....	4
GEOL 336 Stratigraphy and Sedimentology .....	4
GEOL 465 Earth Science Seminar .....	1
MATH 155 Modern Statistics with Computer Analysis .....	3
PHYS 121 General Physics I .....	4
or	
PHYS 221 Physics I .....	4

2. Complete one of the following tracks.

### General Earth Science Track

The General Earth Science Track is designed for students who wish to complete a traditional liberal arts major in earth science. This track provides maximum flexibility in developing an individualized program, in consultation with a faculty advisor.

Complete at least three courses from the following

	Credits
GEOG 311* Coastal Processes .....	3
GEOG 312 Severe and Hazardous Weather .....	3
or	
GEOG 409 Dimensions of Climatic Change .....	3
or	
GEOG 410 Meteorology .....	3
or	
GEOG 413 Applied Climatology .....	3
GEOG 401 Soil, Water and Environment .....	3
GEOG 411 Geomorphology .....	4
GEOG 322* Geological Oceanography .....	3
GEOG 405 Environmental Geology .....	4
GEOG 407 Hydrogeology .....	4
GEOG 420 Structural Geology .....	4

\* Course has a prerequisite of GEOG 111

## Geoenvironmental Science Track

The Geoenvironmental Science Track is focused on the application of geosciences to solve environmental problems and is designed for students who wish to pursue professional careers in geology, hydrology and environmental science.

Complete the following:

	Credits
GEOG 411 Geomorphology .....	4
GEOG 405 Environmental Geology .....	4
GEOG 407 Hydrogeology .....	3
GEOG 420 Structural Geology .....	4

Complete one additional course from the following:

	Credits
GEOG 311* Coastal Processes .....	3
GEOG 401 Soil, Water and Environment .....	3
GEOG 322* Geological Oceanography .....	3

\* Course has a prerequisite of GEOG 111

## Teacher Certification

Complete at least three courses from the following

	Credits
GEOG 311* Coastal Processes .....	3
GEOG 312 Severe and Hazardous Weather .....	3
or	
GEOG 409 Dimensions of Climatic Change .....	3
or	
GEOG 410 Meteorology .....	3
or	
GEOG 413 Applied Climatology .....	3
GEOG 401 Soil, Water and Environment .....	3
GEOG 411 Geomorphology .....	4
GEOG 322* Geological Oceanography .....	3
GEOG 405 Environmental Geology .....	4
GEOG 407 Hydrogeology .....	3
GEOG 420 Structural Geology .....	4

\* Course has a prerequisite of GEOG 111

Students seeking licensure to teach earth science in secondary schools must complete the following science requirements beyond the earth science core as well as the secondary education program requirements.

	Credits
BIOL 101 Fundamentals of Biology .....	4
BIOL 115/	
MDTC 101 Safety in the Biological, Chemical and Clinical Laboratory .....	1
PHYS 109 Principles of Astronomy .....	3

## ▶ SECONDARY EDUCATION PROGRAM REQUIREMENTS

**Note:** Students may repeat each education course only once.

## ▶ 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 Core, 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.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## GEOGRAPHY

Department of Geography and Geosciences  
[www.salisbury.edu/geography](http://www.salisbury.edu/geography)

Dr. Daniel Harris, Chair  
 410-543-6460

All courses applied to the geography major must be completed with grades of C or better. 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.

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 Statistical Problem Solving in Geography .....	4
GEOG 219 Map Interpretation and Analysis.....	4

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. No more than one field course (GEOG 389 or 399) may count toward the 15 hours.

### 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 314 Tropical Meteorology .....	3
GEOG 410 Meteorology .....	3
GEOG 412 Weather Analysis and Forecasting.....	3

- Complete at least two courses from the following:

	Credits
GEOG 311 Coastal Processes .....	3
GEOG 321 Remote Sensing of the Environment .....	4
GEOG 401 Soil, Water and Environment .....	3
GEOG 403 Environmental Hazards .....	3
GEOG 409 Dimensions of Climatic Change .....	3
GEOG 411 Geomorphology .....	4
GEOG 413 Applied Climatology .....	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 natural resource management. The requirements are:

	Credits
GEOG 111 Introduction to Oceans and Coasts .....	3
GEOG 411 Geomorphology .....	4

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

	Credits
GEOG 311 Coastal Processes .....	3
GEOG 312* Severe and Hazardous Weather .....	3
GEOG 321 Remote Sensing of the Environment .....	4
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
GEOL 405 Environmental Geology .....	4

### 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 Seminar in 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 .....	4
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 Digital Design and Layout .....	4
COSC 220 Computer Science II.....	4
COSC 482 Computer Graphics .....	4
INFO 211 Information Systems Concepts for Management.....	3
INFO 386 Database Management Systems .....	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.....	4
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 .....	4
GEOG 419 Advanced Geographic Information Science.....	4
GEOG 435 GIS Programming.....	3

### Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## MATHEMATICS

Department of Mathematics and Computer Science  
[www.salisbury.edu/mathcsc](http://www.salisbury.edu/mathcsc)

Dr. Donald E. Spickler, 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 216 Statistical Thinking .....	4
MATH 306 Linear Algebra .....	4
MATH 310 Calculus III .....	4

Students then complete their major in one of six ways: traditional option, applied option, actuarial science track, computational mathematical sciences track, 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, including prerequisite 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 four courses:

	Credits
COSC 117 Programming Fundamentals .....	4
or	
COSC 120 Computer Science I .....	4
MATH 311 Differential Equations I .....	4
MATH 441 Abstract Algebra I.....	4
MATH 451 Analysis I .....	4

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

	Credits
MATH 414 Mathematical Statistics II .....	4
MATH 442 Abstract Algebra II .....	4
MATH 452 Analysis II .....	4

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 four courses:

	Credits
COSC 117 Programming Fundamentals .....	4
or	
COSC 120 Computer Science I .....	4
MATH 311 Differential Equations I .....	4
MATH 413 Mathematical Statistics I.....	4
MATH 451 Analysis I .....	4



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

	Credits
MATH 414 Mathematical Statistics II .....	4
MATH 452 Analysis II .....	4

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

	Credits
MATH 465 Mathematical Models and Applications .....	4
MATH 471 Numerical Methods.....	4
MATH 475 Dynamics and Chaos .....	4
MATH 493 Advanced Topics in Statistics.....	4

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 12 courses:

	Credits
ACCT 201 Introduction to Financial Accounting.....	3
COSC 117 Programming Fundamentals .....	4
or	
COSC 120 Computer Science I .....	4
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 Regression Analysis .....	4
MATH 413 Mathematical Statistics I.....	4
MATH 414 Mathematical Statistics II .....	4
MATH 415 Actuarial and Financial Models .....	4

Students must also take one additional 400-level mathematics course

### Computational Mathematical Sciences Track

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

	Credits
COSC 117 Programming Fundamentals .....	4
COSC 120 Computer Science I .....	4
COSC 220 Computer Science II.....	4
COSC 320 Advanced Data Structures and Algorithm Analysis .....	4
COSC 420 High-Performance Computing .....	4
MATH 311 Differential Equations .....	4
MATH 471 Numerical Methods.....	4
or	
MATH 472 Numerical Linear Algebra.....	4

Complete one of the following:

MATH 475 Dynamics and Chaos .....	4
MATH 465 Math Models and Applications .....	4
MATH 447 Cryptography .....	4
MATH 471 Numerical Methods (if not previously taken) .....	4
MATH 472 Numerical Linear Algebra (if not previously taken) .....	4

Students must also complete one additional upper-level COSC course or 400-level MATH course. COSC 380, COSC 390 and MATH 495 do not satisfy this requirement.

Student must complete one of the following field experiences:

	Credits
MATH/ COSC 380 Internship .....	3
MATH/ COSC 390 Undergraduate Research Project.....	3
MATH 495 Directed Consulting .....	3

### Computer Science Concentration

*PLEASE NOTE: The Computer Science Concentration has been suspended. The status of the program is in review. New students will not be admitted into the program during the period of suspension.*

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.....	4

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
COSC 117 Programming Fundamentals .....	4
or	
COSC 120 Computer Science I .....	4
MATH 313 Survey Design and Sampling .....	4
MATH 314 Regression Analysis .....	4
MATH 411 Design and Analysis of Experiments .....	4
MATH 413 Mathematical Statistics I.....	4
MATH 414 Mathematical Statistics II .....	4
MATH 493 Advanced Topics in Statistics .....	4
MATH 3XX Math Elective .....	4
or	
MATH 4XX Math Elective.....	3/4
MATH 4XX Math Elective.....	3/4

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 .....	4
MATH 430 Mathematical Connections for Secondary School Teachers .....	4
MATH 441 Abstract Algebra I .....	4
MATH 451 Analysis I .....	4
MATH 465 Mathematical Models and Applications .....	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 Core, 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.

No course may be taken until all prerequisite courses have been completed with grades of C or better.

### ► 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.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## MEDICAL LABORATORY SCIENCE

Department of Health Sciences  
[www.salisbury.edu/healthsci/medtech](http://www.salisbury.edu/healthsci/medtech)

Dr. Diane Davis, Program Director  
 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 located primarily throughout Maryland and lower Delaware. Students are responsible for the cost of admission exam, the cost of background check and drug testing prior to clinical placements, 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 and tests, including the hepatitis B vaccine, and a physical examination performed by a qualified clinician 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.

Students should consult regularly with their advisors when developing their individual program plans and selecting courses. Transfer students and medical laboratory technicians should seek individual advisement from the program to prevent duplication of coursework and/or 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

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 website ([www.salisbury.edu/healthsci/MEDTECH](http://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 2.3 cumulative grade point average when calculating all undergraduate coursework taken at all institutions. This includes transfer courses.
3. Successfully complete the following with grades of C or better and earn a GPA of at least 2.3 in these courses: 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.

Due to changing clinical site and agency regulations, SU students who accept admission to the Medical Laboratory Science Professional Program must undergo a criminal background check and drug test in order to participate in clinical rotations. Applicants are advised that if they have been convicted of a felony or have pled nolo contendere to a felony or to a crime involving moral turpitude, they may not be eligible for licensure as a Medical Laboratory Scientist. All students must sign a Notice of Possible Implications of Criminal Convictions and Required Criminal Background Checks. This form states that the student is aware of the possibility of a criminal background check and the implications for licensure if he or she has a criminal background.

### ► 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 best grades and most prerequisite courses completed and 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 when space is available. 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.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## NURSING

Department of Nursing  
[www.salisbury.edu/nursing](http://www.salisbury.edu/nursing)

Dr. Jeffrey Willey, 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
3. RNs with an associate's degree in nursing and an unrelated bachelor's degree
4. 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

1. 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/CADR XXX Elective .....	4

2. 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**

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 website.
2. Due to changing clinical site and agency regulations, SU students who accept admission to the nursing program will be asked to undergo one or more criminal background check and drug testing in order to participate in clinical rotations. It is the students' responsibility to have the background checks and drug testing completed.
3. 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.

**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.

1. Must be admitted to Salisbury University.
2. All transcripts from all previous academic institutions attended must be sent to the Admissions Office.
3. 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.
4. 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 website at [www.salisbury.edu/nursing](http://www.salisbury.edu/nursing) or can be obtained from the department administrative assistant (Devlbiss Hall Room 231). Again, applications are considered on a competitive and space-available basis.
5. Register for, schedule and complete the Evolve Reach Admission Assessment Exam (A2) at a Prometrics testing center. Go to [www.salisbury.edu/nursing](http://www.salisbury.edu/nursing) for more information.

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► **Checklist**

For a major checklist visit [www.salisbury.edu/checklists](http://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 website.

► **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 456 Pharmacotherapeutics .....	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. They also must provide their own reliable means of transportation to various clinical sites throughout the region and are responsible for all travel expenses.

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:

- 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.
- 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.
- Proof of completion of academic coursework with a grade of C or higher in: basic statistics, microbiology, anatomy and physiology I and II (all body systems), chemistry or physics, and pathophysiology. All prerequisite requirements must be completed no later than one month prior to the first day of class. (Failure to do so may result in losing your seat in the class). Students with grades below C in any prerequisite courses will be ineligible for admission into the second degree program.

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:

- Admission to the University, and
- 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](http://www.salisbury.edu/nursing/SecDeg.html). All second bachelor’s degree students must meet the enrollment requirements listed previously in this section.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## PHYSICS

Department of Physics

[www.salisbury.edu/physics](http://www.salisbury.edu/physics)

Dr. Mark Muller, Chair

410-548-2083

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 the Dual Degree Engineering Transfer 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:

- 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

- 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 complete the engineering physics core and select five courses from the engineering physics track in addition to the physics core:

1. Complete the following engineering physics core courses:

	Credits	
ENGR 100	Introduction to Engineering Design .....	3
ENGR 110	Statics .....	3
PHYS 470	Senior Seminar .....	1
PHYS 490	Research .....	2
or		
ENGR 490	Research in Engineering .....	2

2. Complete five additional courses from the following:

	Credits	
ENGR 220	Mechanics of Materials.....	3
ENGR 221	Dynamics .....	3
ENGR 232	Thermodynamics .....	3
ENGR 331	Fluid Mechanics .....	3
ENGR 409	Acoustics .....	3
PHYS 321	Analog Electronics .....	3
PHYS 322	Digital Electronics .....	4
PHYS 413	Computer Architecture and Interfacing.....	3

## 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 must complete all academic major requirements with grades of C or better. Students may repeat education courses only once.

	Credits	
BIOL 101	Fundamentals of Biology .....	4
PHYS 108	Introduction to Astronomy.....	4
or		
PHYS 109	Principles of Astronomy .....	3
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 Core, 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 Transfer Program

The Dual Degree Engineering Transfer Program offers student the opportunity to earn both a degree in physics from Salisbury University and an engineering degree from an ABET (Accreditation Board for Engineering and Technology)-accredited engineering school. Under the program, a student normally attends SU for three years and an engineering school for two years. While at SU, a student must complete a minimum of 90 credit hours, including all required General Education courses, the physics core and appropriate engineering courses. Transfer students entering SU's dual-degree program are required to complete a minimum of 60 semester hours at SU. The dual-degree engineering student also must apply for admission and be accepted to an ABET-accredited engineering school. An additional 30 hours, including at least 15 hours in engineering or related courses, must be completed at the receiving institution and be transferred to SU to receive a physics baccalaureate degree from SU. To receive an engineering degree, additional coursework must be completed at the receiving institution according to the requirements of the engineering school attended. Please note, the completion of SU requirements does not guarantee admission into an engineering school. Additionally, it is the student's responsibility to make sure all engineering school prerequisites are met.

The courses at Salisbury University that are required for the Dual Degree Engineering Transfer Program are described in this catalog with other programs offered by the Physics Department in the Richard A. Henson School of Science and Technology.

Students in the Dual Degree Engineering Transfer Program may use credits and grades from the receiving institution as well as Salisbury University in meeting the requirements for graduating with honors.

### ► Checklist

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists).

## RESPIRATORY THERAPY

Department of Health Sciences  
[www.salisbury.edu/healthsci/respcaare.html](http://www.salisbury.edu/healthsci/respcaare.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 an associate degree in respiratory therapy and have earned the registered respiratory therapist (RRT) credential may apply for advanced standing in the major. Each applicant will be evaluated on an individual basis to determine class standing within the major.

## 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 from all institutions attended and with consideration of the overall academic record. Applicants for admission into the Respiratory Therapy Program who have a cumulative GPA of less than 2.3 will not be considered. 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.
5. Submit the Intent to Enroll form prior to February 10 of each year. This form is available on the Respiratory Therapy Program website ([www.salisbury.edu/healthsci](http://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.

1. Complete prerequisite science and math courses:



	<b>Credits</b>
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

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

	<b>Credits</b>
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.

► **Checklist**

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists)

**URBAN AND REGIONAL PLANNING**

Department of Geography and Geosciences  
[www.salisbury.edu/geography](http://www.salisbury.edu/geography)

**Dr. Daniel Harris, Chair**  
**410-543-6460**

All courses applied to the major must be completed with grades of C or better. Except for GEOG 204, 219, 304, 319 and 414 and URPL 308, 402, 408, the core courses may be taken in any order, and a student may register for more than one in any given semester. The Department of Geography and Geosciences recommends that the lower-division core courses (GEOG 204 and 219) be completed prior to GEOG 414.

Transfer students must complete a minimum of 15 semester hours with grades of C or better in URPL and GEOG courses at Salisbury University, at least 12 semester hours of which must be at the 300/400 level.

Bachelor of Science requirements for the major include the following:

1. Complete the core courses

	<b>Credit</b>
ECON 150 Principles of Economics .....	3
or	
ECON 211 Principles of Microeconomics .....	3
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 204 Statistical Problem Solving in Geography .....	4
GEOG 219 Map Interpretation and Analysis .....	4

GEOG 319 Geographic Information Science .....	4
GEOG 414 Research and Writing .....	3
MATH 155 Modern Statistics with Computer Analysis .....	3
POSC 202 State and Local Government in the U.S. ....	4
URPL 308 Principles of Planning .....	3
URPL 402 Environmental Planning .....	3
URPL 408 Seminar in Urban Theory .....	3

2. Choose one area of concentration: Land Use Planning or Environmental Planning

	<b>Credits</b>
<b>Land-Use Planning (take three courses)</b>	
GEOG 304 Decision Making with GIS .....	4
URPL 328 Applied Planning .....	3
URPL 416 Smart Growth .....	3
<b>Environmental Planning (take at least three courses)</b>	
GEOG 325 Conservation and Resource Management .....	3
GEOG 401 Soil, Water and Environment .....	3
POSC 360 Environmental Policy .....	4
POSC 460 Environmental Law .....	4
URPL 416 Smart Growth .....	3

3. Complete at least two courses different from those taken to satisfy an area of concentration:

	<b>Credits</b>
GEOG 304 Decision Making with GIS .....	4
GEOG 325 Conservation and Resource Management .....	3
GEOG 401 Soil, Water and Environment .....	3
GEOG 403 Environmental Hazards .....	3
POSC 360 Environmental Policy .....	4
URPL 328 Applied Planning .....	3
URPL 416 Smart Growth .....	3

4. Take at least one of the following:

	<b>Credits</b>
GEOG 333 Global Development and Sustainability .....	3
POSC 311 Comparative Government of Developing Nations .....	4
URPL 363 Cities of the Middle East .....	3

5. Recommended minor areas: Select one area: CADR, ECON, ENVR, GEOG, GIS, HIST or POSC

► **Checklist**

For a major checklist visit [www.salisbury.edu/checklists](http://www.salisbury.edu/checklists)

# Graduate Programs

## MASTER OF SCIENCE IN APPLIED BIOLOGY

Department of Biological Sciences

[www.salisbury.edu/biology/MS\\_Applied\\_Biology.html](http://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 optional non-thesis program and an accelerated 4+1 M.S. program for advanced undergraduates 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.

- 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 each semester. Students who earn a C will be required to meet with the departmental Graduate Committee. A student who earns a second grade of C will be dismissed from the program. Any grade of D or lower will result in dismissal from the program.

#### ► Core Courses

Complete at least two (six hours) of the four core courses below:

	Credits
BIOL 501 Modern Concepts in Biology .....	3
BIOL 502 Biology and Environment .....	3
BIOL 575 Modern Molecular Biology .....	3
MATH 5XX Statistics .....	3

#### ► Thesis Option

Complete the core courses (six hours) and 27 additional hours:

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

#### ► Non-Thesis Option

Complete the core courses (six hours) and 27 additional hours:

	Credits
BIOL 515 Research in Biology .....	6
BIOL XXX Graduate Elective Courses* .....	21

#### ► Graduate Electives\*

Core courses also may be used to complete this requirement.

	Credits
BIOL 500 Wetland Ecology .....	4
BIOL 503 Contemporary Cell Biology .....	3
BIOL 504 Perspectives in Modern Genetics .....	3
BIOL 505 Ornithology .....	4
BIOL 507 The Biology of Fishes .....	3
BIOL 510 Estuarine Biology .....	3
BIOL 512 Entomology .....	4
BIOL 521 Mammalogy .....	4
BIOL 522 Vertebrate Physiology .....	4
BIOL 523 Biology of Reptiles and Amphibians .....	4
BIOL 525 Toxicology .....	3
BIOL 530 Plant Physiology .....	4
BIOL 533 Environmental Microbiology .....	4
BIOL 535 Evolutionary Biology .....	3

BIOL 540	Contemporary Genetics .....	4
BIOL 541	Bioinformatics II .....	3
BIOL 545	Virology.....	3
BIOL 550	Internship in Biology .....	1-3
BIOL 552	Advanced Human Physiology/Pathophysiology .....	3
BIOL 560	Biology of Cell Membranes .....	3
BIOL 565	Advanced Cell Biology .....	3
BIOL 570	International Field Studies .....	3
BIOL 590	Special Topics in Biology.....	1-4

### ► 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.

### 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 in biology, 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:

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

## MASTER OF SCIENCE IN APPLIED HEALTH PHYSIOLOGY

Department of Health Sciences  
[www.salisbury.edu/ahph](http://www.salisbury.edu/ahph)

Dr. Randy Insley, Program Director  
 410-543-6409

The Master of Science (M.S.) in applied health physiology (AHPH) 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 website at [www.salisbury.edu/ahph](http://www.salisbury.edu/ahph).

### ► Admission

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

- 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.
- Completion of an application for graduate studies.
- Payment of the application fee.
- Submission of official transcript(s) from all colleges/universities attended.
- Two academic letters of recommendation.
- One-page personal letter stating career goals(s).
- 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.
- Completion of the Graduate Record Exam (General) and results presentation to AHPH admissions faculty member for advisement.
- To satisfy internship site-specific requirements before internship, student should anticipate providing proof of:
  - recent tuberculin skin test; proof of immunity to measles, mumps, rubella; documentation of hepatitis B vaccination; proof of in-season influenza vaccination; and a current physical examination.
  - professionally obtained background investigation
  - professionally obtained drug screening
  - professional liability insurance

B. Prerequisite undergraduate coursework for all candidates includes:

- Human Anatomy and Physiology (eight credit hours, e.g. BIOL 215 & 216)
- Exercise Physiology (four credit hours, e.g. EXSC 344)

3. Stress Testing and Exercise Prescription (four credit hours, e.g. EXSC 472)
4. Kinesiology or Biomechanics (four credit hours, e.g. EXSC 333)

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 42 credit hours, of which a minimum of 33 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:

► **Required Courses (42 credit hours)**

	<b>Credits</b>
AHPH 502 Introduction to Research (recommended) .....	3
or	
NURS 544 Quantitative Research in Health Care .....	3
AHPH 512 Performance: Theory and Practice.....	3
AHPH 532 Exercise Metabolism .....	3
AHPH 534 Human Psychophysiology .....	3
AHPH 542 Comprehensive Weight Management .....	3
AHPH 544 Essentials of Pharmacology .....	3
AHPH 545 Cardiopulmonary Physiology .....	3
AHPH 546 Special Populations Interventions .....	3
AHPH 553 Applied Clinical Physiology .....	3
AHPH 557 Applied Cardiopulmonary Physiology.....	3
AHPH 559 Research in Physiology .....	3
AHPH 692 Internship I .....	3
AHPH 693 Internship II.....	3
MATH 502 Applied Statistics .....	3

► **Electives**

	<b>Credits</b>
AHPH 513 Exercise and Strength Training for Rehabilitation .....	3
AHPH 514 Muscle Physiology .....	3
AHPH 515 Applied Strength Conditioning .....	3
AHPH 562 Trends and Issues in Physiology .....	3
AHPH 590 Selected Topics in Applied Health Physiology .....	3

**MASTER OF SCIENCE  
IN GEOGRAPHIC INFORMATION  
SYSTEMS MANAGEMENT**

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

**Dr. Stuart Hamilton, Program Director**  
410-548-3518

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 entirety of the program is offered online.

► **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 management 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 are offered online only.

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:

	<b>Credits</b>
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:

	<b>Credits</b>
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](http://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.

- 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.

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## 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

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## 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

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# MASTER OF SCIENCE IN NURSING

Department of Nursing

[www.salisbury.edu/nursing/SalisburyNursing.html](http://www.salisbury.edu/nursing/SalisburyNursing.html)

Dr. Lisa Seldomridge, Program Director

410-543-6413

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 and clinical nurse educators.

Students seeking the Master of Science in nursing must complete an approved program of study, including 35-36 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 master’s program requires acceptance to the University for graduate study, as well as acceptance into the Master of Science (Nursing) Program. Admission to the program is a competitive process, and the following required items will be considered individually as the final applicant selections are made.

- B.S. in nursing from a nationally accredited program with a cumulative GPA of 3.0 or higher (except eligible RN-to-M.S. students)
- Current and active United States Registered Nursing (RN) license
- Official transcripts from all colleges and universities attended
- Current resume or curriculum vitae
- One-two page narrative describing academic and professional goals
- Two academic or professional references/letters of recommendation
- Residency/Domicile Information form (for those students applying for in-state tuition)
- Fulfillment of University requirements for international students as outlined in the catalog
- Completion of an interview by the Graduate Program director, department chair or members of the Graduate Program Committee

Clinical experience is not required, but students are encouraged to work in professional nursing roles during summers and semester breaks.

### ► Nursing Enrollment/Program Requirements

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

- 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 website.
- Due to changing clinical site and agency regulations, SU students who accept admission to the nursing program will be asked to undergo one or more criminal background checks as well as drug testing in order to participate in clinical rotations. Costs associated with the criminal background checks and drug testing will be assumed by the student
- 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.
- Evidence of current RN licensure in the state of Maryland, a compact state or the state in which the student is currently practicing.

### ► Progression Requirements

Master’s students in the Department of Nursing must achieve a grade of B or better in all Thesis, Internship and Capstone courses (NURS 590, 592 and 593-595) and all nursing courses that are considered to be practicum courses. These courses include: NURS 562, NURS 572, NURS 574 and NURS 592. 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:

- 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.
- Maintain current clinical and health requirements.

### ► Program of Study

A minimum of 35-36 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 (HCL) and nurse educator (NE). Graduates of the NE track are eligible to take the National League for Nursing (NLN) Certified Nurse Education examination.

The time required for completion of the master’s-level program depends on the individual student’s 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 the specific master’s 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 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 website.

► **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

► **Master's in 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
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

► **Master's in Nursing Track**

Complete required courses in the NE or HCL nursing tracks.

**Master's in 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

► **Nurse Educator**

PLEASE NOTE: Curricular revisions are underway. Please contact the Graduate Nursing Office for more information.

	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 Teaching and Learning for Nurse Educators: Principles and Practicum .....	6

**DOCTOR OF NURSING PRACTICE**

Department of Nursing

Dr. Lisa Seldomridge, Program Director

410-543-6413

Dr. Erica Alessandrini, FNP Coordinator

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 levels 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-Baccalaureate to D.N.P.**

**(Family Nurse Practitioner) Option**

The post-baccalaureate D.N.P. program allows students with a bachelor's degree to enter directly into doctoral study while also earning the credentials of Family Nurse Practitioner (FNP).

The distance delivery program is designed for students who wish to engage in full-time study. The 80-credit curriculum spans four years – full time during fall and spring semesters with a lighter academic load during the summer. Variations in length of study may occur based on student needs and circumstances with program director approval. Courses are taught by experienced faculty, with small classes that foster close student-faculty working relationships. D.N.P. students culminate their education with the completion of a comprehensive doctoral project. Students take four separate



courses that will guide them through project development, implementation, evaluation and dissemination.

Coursework includes: quantitative and qualitative research, evidence-based practice, epidemiology, applied statistics, advanced human physiology, advanced health assessment, advanced pharmacotherapeutics, family nursing, adult health care management, women’s and children’s health care management, issues in advanced nursing practice, health care systems, finance, informatics, quality improvement, health promotion and clinical prevention, genetics, and genomics. All student complete a D.N.P. project and 1,000 clinical hours, including 400 hours in SU’s D.N.P. Practicum, reflecting at least two different areas of focus and with advisor’s approval. Graduates are eligible to take the certification exams offered by the American Nurses’ Credentialing Center and American Academy of Nurse Practitioners.

**► Post-Baccalaureate to D.N.P. Admission Requirements**

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

- B.S. in nursing from nationally accredited program.
- Applicants with cumulative undergraduate GPA ≥ 3.50 (on a 4.0 scale) are given first priority.
- Applicants with cumulative undergraduate GPA 3.0-3.49 may be considered on an individual basis.
- Proof of successful completion of basic undergraduate statistics and undergraduate research (minimum grade of C required).
- Current and active U.S. Registered Nursing (RN) license.
- Official transcripts from all colleges and universities attended.
- GRE – Analytical Writing Score (minimum 3.5/6.0).
- Current resume or curriculum vitae.
- Three academic or professional references/letters of recommendation.
- A 500- to 1,000-word essay.
- Residency/Domicile Information form (for those applying for in-state tuition).
- Fulfillment of University requirements for international students as outlined in the catalog.
- Interview by the graduate program director or designee.
- Clinical experience is not required for admission, but students are encouraged to work in professional nursing roles during summers and semester breaks.

**► Post-Baccalaureate to D.N.P. Enrollment Requirements**

After acceptance into the nursing program and prior to beginning any courses, students must:

- Meet 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 website.

- Students who accept admission to the nursing program will be asked to undergo one or more criminal background checks as well as drug testing in order to participate in clinical rotations. Costs associated with the criminal background checks and drug testing will be assumed by the student
- 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.
- Current RN licensure in the state of Maryland, a compact state or the state in which the student is currently practicing.

**► Post-Baccalaureate Curriculum**

Required courses are as follows:

	Credits
<b>First Year, Fall</b>	
NURS 515 Epidemiology.....	3
NURS 542 Qualitative Research .....	3
NURS 552 Advanced Physiology/Pathophysiology .....	3
<b>First Year, Spring</b>	
MATH 502 Applied Statistics .....	3
NURS 516 Family Nursing .....	4
NURS 544 Quantitative Research .....	3
<b>Second Year, Fall</b>	
NURS 744 Evidence-Based Practice .....	3
FINA 535 Health Care Finance .....	3
XXX Approved Elective (interdisciplinary – not NURS) .....	3
<b>Second Year, Spring</b>	
NURS 522 Pharmacotherapeutics .....	3
NURS 580 Leadership and Public Administration .....	3
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
<b>Second Year, Summer</b>	
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
<b>Third Year, Fall</b>	
NURS 526 Informatics .....	3
NURS 561 Health Care Management .....	3
NURS 742 Quality Improvement in Healthcare .....	3
NURS 881 D.N.P. Evidence-Based Project 1: Topic Exploration and Identification .....	1
<b>Third Year, Winter</b>	
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
<b>Third Year, Spring</b>	
NURS 510 Advanced Health Assessment (Didactic) .....	3
NURS 525 Health Care Systems .....	3
NURS 815 Genetics and Genomics in Healthcare.....	3
NURS 882 D.N.P. Evidence-Based Project 2: Proposal Development .....	1
<b>Third Year, Summer</b>	
NURS 511 Advanced Health Assessment (Practicum) .....	2
<b>Fourth Year, Fall</b>	
NURS 558 Adult Health Care .....	6
NURS 858 Health Promotion and Clinical Prevention .....	3
NURS 883 D.N.P. Evidence-Based Project 3: Implementation .....	1
<b>Fourth Year, Winter</b>	
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
<b>Fourth Year, Spring</b>	
NURS 514 Issues in Advanced Nursing.....	3
NURS 559 Women and Children’s Health Care Management (Didactic) .....	6
NURS 884 D.N.P. Evidence-Based Project 4: Evaluation and Dissemination .....	1
<b>TOTAL CREDITS: 80</b>	

\* 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.

## Post-Master's to D.N.P. Option

The D.N.P. Program is offered via distance delivery. This 38-credit post-masters option is 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 approximately three years, taking six credits per semester. Students who take fewer courses per semester will take 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, with at least 400 hours in SU's D.N.P. Practicum, reflecting at least two different areas of focus and with advisor's approval.

### ► Admission to the Post-Master's D.N.P. Program

Admission to the Post-Master's 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 Post-Master's D.N.P. Program is a competitive process, and the following required items will be considered individually as the final applicant selections are made.

- M.S. in nursing from a nationally accredited program with a cumulative GPA of 3.0 or higher.
- Current and active United States Registered Nursing (RN) license.
- Official transcripts from all colleges and universities attended.
- Current resume or curriculum vitae.
- Three academic or professional references/letters of recommendation.
- A 500- to 1,000-word essay.
- Residency/Domicile Information form (for those students applying for in-state tuition).
- Fulfillment of University requirements for international students as outlined in the catalog.
- Interview by the graduate program director or designee.
- Clinical experience is not required for admission, but students are encouraged to work in professional nursing roles during summers and semester breaks.

### ► Post-Master's to D.N.P.

#### Enrollment Requirements

After acceptance into the nursing program and prior to beginning any courses, students must:

- Meet 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 website.
- Students who accept admission to the nursing program will be asked to undergo one or more criminal background checks as well as drug testing in order to participate in clinical rotations. Costs associated with the criminal background checks and drug testing will be assumed by the student

- 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.
- Current RN licensure in the state of Maryland, a compact state or the state in which the student is currently practicing.

### ► 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 (FNP) and indirect (leadership) 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 include 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. A minimum of four credits of D.N.P. Practicum are required, to be completed while enrolled in the SU D.N.P. Program.

### ► Progression Post-Master's to D.N.P.

Students in the D.N.P. Program must earn a B or better in all courses to successfully complete the D.N.P. Program. Students who receive a grade lower than a B in any course who wish to continue in the program must submit a written request to the graduate program director to do so. This request must include a clearly stated plan for how and where the course will be repeated by the student. This request will be reviewed by the Graduate Program Committee, and if granted, the student may repeat the course for a grade of B or better. In any case, only one course may be repeated one time during the program.

### ► Post-Master's Curriculum

The D.N.P. curriculum incorporates 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, one 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 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 (FNP versus leadership). Timeline to completion and 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. However, a minimum of 400 NURS 880 Practicum hours must be completed while enrolled in the SU D.N.P. Program.

Required courses are as follows:

	Credits
<b>First Year, Fall</b>	
NURS 561 Health Care Management .....	3
NURS 744 Evidence-Based Practice .....	3
<b>First Year, Spring</b>	
NURS 525 Health Care Systems .....	3
NURS 580 Special Topics: Leadership and Public Administration .....	3
<b>Second Year, Fall</b>	
NURS 742 Quality Improvement in Healthcare .....	3
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
NURS 881 D.N.P. Evidence-Based Project 1: Topic Exploration and Identification .....	1
<b>Second Year, Spring</b>	
NURS 858 Health Promotion and Clinical Prevention .....	3
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
NURS 882 D.N.P. Evidence-Based Project 2: Proposal Development .....	1
<b>Second Year, Summer</b>	
XXX Approved Elective** .....	3
<b>Third Year, Fall</b>	
FINA 535 Health Care Finance .....	3
NURS 526 Informatics .....	3
NURS 883 D.N.P. Evidence-Based Project 3: Implementation .....	1
<b>Third Year, Spring</b>	
NURS 815 Genetics and Genomics in Healthcare.....	3
NURS 880 D.N.P. Evidence-Based Practicum .....	1-3*
NURS 884 D.N.P. Evidence-Based Project 4: Evaluation and Dissemination .....	1
<b>TOTAL CREDITS: 38**</b>	

\* A minimum of four credits of NURS 880 Practicum are required, with 400 hours completed while enrolled in the SU D.N.P. Program. 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.  
\*\* Only one approved elective (3 credits) is required.  
Students ultimately must have 1,000 total clinical hours and may need to take additional credits of NURS 694 Doctoral Practice Experience 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-DOCTORATE OF NURSING PRACTICE CERTIFICATE OF COMPLETION: FAMILY NURSE PRACTITIONER

This certificate program is for students who have either already completed a Doctor of Nursing Practice or are concurrently enrolled in one of the Doctor of Nursing Practice programs and are seeking to complete the requirements for the Family Nurse Practitioner as well.

The following courses are required:

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

## 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

