BIOLOGY-BIOTECHNOLOGY CONCENTRATION-B.S.
A 4-year template is available at www.ship.edu/undeclared

General Education Requirements

I. Required Skills and Competencies 16 cr
___ ENG 106 Writing Intensive First Year Seminar OR
ENG 110 Advanced Placement Writing (3 cr)
May need ENG 050 Basic Writing first, based on test results
___ HCS 100 Intro to Human Communication (3 cr)
___ Mathematical Competency-Required
MAT 211 Calculus I —if necessary, student may need
MAT 175 Pre-Calculus first
___ HIS 105 Historical Foundations of Global Cultures (3 cr) AND
___ HIS 106 Thinking Historically in a Global Age (3 cr)

II. Categories of Knowledge 35 cr
A: Logic/Numbers for Rational Thinking (4 cr)
___ MAT 117 Applied Statistics
B: Literary, Artistic & Cultural Traditions (9 cr)
___ ______________________________
___ ______________________________
___ ______________________________
C: Biological & Physical Sciences (10 cr)
___ PHY 121 Introductory Physics
___ CHM121 Chemical Bonding
___ BIO 161 Principles of Biology: Cell Structure & Function **
D: Political, Economic & Geographic Science (6 cr)
___ ______________________________
___ ______________________________
E: Social & Behavioral Science (6 cr)
___ PSY 101 Introduction to Psychology [required for Forensic Sci]

III. Library Skills Complete via College/Advanced Writing course

Biology Requirements 37 cr

CORE COURSES 34 cr
___ BIO 161 Principles of Biology: Cell Structure & Function (4 cr) *
___ BIO 162 Principles of Biology: Organismal Diversity (4 cr) **
___ BIO 230 Botany (3 cr)
___ BIO 260 Genetics (3 cr)
___ BIO 385 Cell Biology (3 cr)
___ BIO 418 Molecular Biology (3 cr)
___ BIO 461 Techniques in Biotechnology (3 cr)
___ BIO 499 Captone Seminar in Biology (1 cr)
Physiology elective 3- 4 cr
___ BIO 350 Human Physiology (4 cr) OR
BIO 351 Animal Physiology (4 cr)

Experiential Requirement
___ BIO 397 Intro. to Research (3 cr) OR Research/Internship
___ BIO 391 Internship (3 cr) **** must be forensic based
**Students must earn at least a 2.0 average in Bio 161 & 162 before
upper level Biology electives may be taken. See the catalog for
remediation procedure.

Additional Biology electives 10 cr
___ BIO ____________________________
___ BIO ____________________________

Strongly recommended biology electives include:
BIO 220 Microbiology
BIO 324 Pathogenic Microbiology
BIO 371 Human Anatomy [for Forensic Science]
BIO 408 Virology
BIO 409 Immunology

Math Requirements 7-8 cr
MAT 211 Calculus I (4 cr) *
MAT A Statistics course (4 cr) * See Category A

Physics Requirements 8 cr

PHY 121 Introductory Physics I* (3 cr) AND
PHY 123 Introductory Physics I lab (1 cr)
PHY 122 Introductory Physics II and (3 cr) AND
PHY 125 Introductory Physics II lab (1 cr)

Chemistry Requirements 22-23 cr

CHM 121 Chemical Bonding* AND
CHM 125 Lab IB (4 cr)
CHM 122 Chemical Dynamics AND
CHM 126 Lab IIB (4 cr)
CHM 221 Organic Chemistry I AND
CHM 225 Lab IIIB (4 cr)
CHM 222 Organic Chemistry II AND
CHM 226 Lab IVB (4 cr)
CHM 301 Biochemistry I (3 cr)
CHM 371 Analytical Chemistry (4 cr) OR
CHM 420 Biochemistry II (3 cr)

Free Electives 7-8 cr
Consider taking Criminal Justice requirements listed below if interested in Pre-Forensic Science.

*Major requirement double counts as General Education credits

Total Graduation Requirements 120 cr

GPA Needed to Declare: 2.5

 Admission to this major is competitive. Students must have earned at least 15 credits and have grades of “C” or better in BIO 161/BIO 162 AND one of the following CHM 121: Chemical Bonding, MAT 175: Pre-Calc OR MAT 211: Calculus I.

Pre-Forensic Science Track

Criminal Justice Requirements 15 cr

CRJ 100 Intro. to Criminal Justice (3 cr)
CRJ 211 Criminal Law and Procedures (3 cr)
CRJ 309 Theories of Crime & Crime Control (3 cr)
CRJ 336 Intro to Forensic Science (3 cr)

Students wishing to do the Pre-Forensic Science track will graduate with at least 122 credits.

Helpful Hints for Advising:

Students should begin their math sequence in the freshman year.

Semester I BIO 161 Principles of Biology: Cell Structure & Function and/or
CHM 121 & CHM 125 Chemical Bonding and lab

Semester II BIO 162 Principles of Biology: Organismal Diversity and/or
CHM 122 & CHM 126 Chemical Dynamics and lab

Students lacking strong chemistry/math backgrounds should consider taking CHM 105: Chemistry: An Observational Approach

Physics is normally taken in the junior year.

Biology minor is available 19 credits.

** Internships are available Fall, Spring, and Summer in the Cumberland County Forensic Laboratory.