# Biological Sciences (BS): Human Biology (17BIOSCBS-17BIOSCHB)

Semester Display Effective Date: 7.2014

## Freshman Year

<table>
<thead>
<tr>
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<th>Fall Semester</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>LSC 101 Critical Creative Thinking Life Sci*</td>
<td>2</td>
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<td>BIO 183 Intro Bio: Cellular &amp; Molecular</td>
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<td>BIO 181 Intro Bio: Ecol, Evol, Biodiversity</td>
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<td>CH 221 Organic Chemistry I</td>
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<td>CH 101 Chemistry-A Molecular Science</td>
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<td>CH 222 Organic Chemistry I Lab</td>
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<td>CH 102 General Chemistry Lab</td>
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<td>ENG 101 Academic Writing &amp; Research*</td>
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<td>GEP Health and Exercise Studies Req*</td>
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## Sophomore Year

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<tbody>
<tr>
<td>BIO 212 OR 250 Intro Anat &amp; Physiology</td>
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<td>PY 211 College Physics I</td>
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<td>CH 223 Organic Chemistry II</td>
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<td>CH 201 Chemistry-A Quantitative Sci.</td>
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<td>CH 224 Organic Chemistry II Lab</td>
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<td>CH 202 Quantitative Chemistry Lab</td>
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<td>GN 311 Principles of Genetics</td>
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<td>ST 311 Intro to Statistics</td>
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<td>HB Elective*</td>
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<td>GEP Humanities Requirement*</td>
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## Junior Year

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<tbody>
<tr>
<td>BCH 351 OR 451 Biochemistry</td>
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<td>BIO 421 Adv Human Anat &amp; Physiol</td>
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<tr>
<td>PY 212 College Physics II</td>
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<td>GEP Social Sciences Requirement*</td>
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<td>MB 351 General Microbiology</td>
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<td>GEP Health &amp; Exercise Studies Req*</td>
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## Senior Year

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<tr>
<td>HB Elective*</td>
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<td>HB Elective*</td>
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<td>HB Elective*</td>
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<td>GEP Humanities Requirement*</td>
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<td>GEP Social Sciences Requirement*</td>
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<td>Science and Math Elective*</td>
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<td>Science and Math Elective*</td>
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<td>Free Elective*</td>
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**Notes:**

1. *Indicates course requirement.
2. **Credits** indicate the total number of credits required for each semester.
3. The courses listed are suggestions and may be modified based on individual academic goals and interests.
Minimum Credit Hours Required for Graduation: 122

**HB Footnotes:**
A grade of C- or better is required in the following courses:
- LSC 101 Critical and Creative Thinking in the Life Sciences
- BIO 181 Introductory Biology: Ecology, Evolution, and Biodiversity
- BIO 183 Introductory Biology: Cellular and Molecular Biology
- GN 311 Principles of Genetics
- MB 351 General Microbiology
- MB 352 or 354 Microbiology Lab
- BCH 351 or 451 Biochemistry

Physiology Requirement – BIO 212 or BIO 250

- BIO 421 Advanced Human Anatomy & Physiology
- MA 131 Calculus for Life and Management Sciences A
- MA 231 Calculus for Life and Management Sciences B
- CH 101/102 Chemistry – A Molecular Science & Lab
- CH 221/222 Organic Chemistry I & Lab
- CH 223/224 Organic Chemistry II & Lab
- CH 201/202 Chemistry - A Quantitative Science & Lab
- PY 211 College Physics I
- PY 212 College Physics II
- ST 311 Introduction to Statistics

Human Biology Electives
Advanced Writing Requirement
ENG 101 Academic Writing & Research

Taking courses for credit only (S/U): PE, Free Electives and courses offered only for S/U credit can be applied to graduation requirements. Students should check with their adviser before electing to take any course that normally is graded A-F as an S/U course.

1. **Mathematics Alternatives**
   - MA 141 and MA 241 can be substituted for MA 131 and MA 231.

2. **Physics Alternatives**
   - PY 205 and PY 208 can be substitutes for PY 211 and PY 212. PY 205 and PY 208 are calculus-based and require that you take the 40 series of Mathematics (MA 141 and MA 241). PY 201 and PY 202 also can be substituted for PY 211 and PY 212. PY 201 and PY 202 are calculus-based, require the 40 series of Mathematics, and are restricted to students in PAMS.

3. **Advanced Writing Requirement (take one course)**
   - Cannot be double-counted for a GEP requirement.
     - COM 211 Argumentation and Advocacy
     - ENG 201 Writing Literary Analysis
     - ENG 214 Introduction to Editing
     - ENG 232 Literature and Medicine
     - ENG 233 The Literature of Agriculture
     - ENG 287 Explorations in Creative Writing
     - ENG 288 Fiction Writing
     - ENG 289 Poetry Writing
     - ENG 292 Writing about Film

   - ENG 316 Principles of News and Article Writing
   - ENG 323 Writing in the Rhetorical Tradition
   - ENG 331 Communication for Engineering and Technology (Junior standing)
   - ENG 332 Communication for Business and Management (Junior standing)
   - ENG 333 Communication for Science and Research (Junior standing)
   - ENG 381 Creative Nonfiction Writing Workshop (ENG 215, 287, 288, or 289 required)
   - ENG 388 Intermediate Fiction Writing Workshop (a "B" or better in ENG 288 required)
ENG 389 Intermediate Poetry Writing Workshop (a “B” or better in ENG 289 required)

ENG 416 Advanced News and Article Writing (ENG 215 required)
ENG 417 Editorial and Opinion Writing (ENG 214 and 215 required)
ENG 422 Writing Theory and the Writing Process
ENG 425 Analysis of Scientific and Technical Writing (ENG 314, 331, 332 or 333 required)
ENG 426 Analyzing Style

4 HB Electives (take 12 credit hours)
Select courses from the following list. Students can use up to 3 hours of BIO 269, BIO 492, BIO 493, or BIO 499 toward this requirement.

ANS 452 Advanced Reproductive Physiology and Biotechnology
ANT 251 Physical Anthropology
ANT 421 Human Osteology
ANT 424 Bioarchaeology
ANT 371 Human Variation
ANT 374 Disease and Society
ANT/WGS 444 Cross-Cultural Perspectives on Women
ANT 450/550 Culture, Ecology, and Sustainable Living
BCH 452 Introductory Biochemistry Laboratory
BCH 453 Biochemistry of Gene Expression
BCH 454 Advanced Biochemistry Laboratory
BCH 455 Proteins and Molecular Mechanisms
BIO 267 Research in the Life Sciences I: Research Skills
BIO/PEH 300 Emergency Medical Technician Basic
BIO/PB 360 Ecology
BIO 315 General Parasitology
BIO 350 Animal Phylogeny and Diversity
BIO 361 Developmental Biology
BIO 370 Developmental Anatomy of the Vertebrates
BIO 375 Developmental Animal Laboratory
BIO 405 Functional Histology
BIO/PB 414 Cell Biology
BIO 442 Biological Clocks
BIO 424 Endocrinology
BIO 426 Advanced Human Anatomy and Physiology Lab
BIO 434 Hormones and Behavior
BIO 440 The Human Animal: An Evolutionary Perspective
BIO 444 Biology of Love and Sex
BIO 456 Epigenetics, Development, and Disease
BIO 482 Capstone Course in Molecular, Cellular, and Developmental Biology
BIO 483 Capstone Course in Integrative Physiology and Neurobiology
BIO 484 Capstone Course in Human Biology
BIO 488/588 Neurobiology
CLA 115 Medical Terminology
EC 437 Health Economics
ENT 207 Insects and Human Disease
GN 301 Genetics in Human Affairs
GN 421 Molecular Genetics
GN 434 Genes and Development
GN 441/541 Human and Biomedical Genetics
GN 451 Genome Science
GPH 201 Fundamentals of Global Public Health
MB 405/505 Food Microbiology
MB 406/506 Food Microbiology Lab
MB 411 Medical Microbiology
MB 412 Medical Microbiology Lab
MB 441 Molecular Immunology
MT 432 Biotextiles Evaluation
MT/PCC 471 The Chemistry of Synthetic and Natural Bipolymers
NTR/ANS/FS 301 Introduction to Human Nutrition
NTR 330 Public Health Nutrition
Free Electives (take 11 credit hours)
These electives cannot be remedial nor can they be taken at an elementary level after you have taken comparable coursework at a more advanced level. Students interested in graduate school or professional school should check the courses required for admission to the programs to which they plan to apply.

Additional Science and Math Electives (take 9 credit hours)
Courses may be selected from the Sci & Math Electives list. Students also can use up to 3 hours of BIO 269 or BIO 492 or BIO 493 or BIO 498/499 (both must be completed) toward this requirement.

*General Education Program (GEP) requirements and GEP Footnotes:
To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied. University approved GEP course lists for each of the following categories can be found at http://oucc.ncsu.edu/gep-courses. See the Department of Biology website (HB Concentration) for a listing of course recommendations for GEP requirements.

Introduction to Writing: ENG 101 (4 credit hours with a C- or better) Must be taken during the first year.

Mathematical Sciences (6 credit hours – one course with MA or ST prefix)
In HB, this GEP requirement is met through the Major course requirements.

Natural Sciences (7 credit hours – include one laboratory course or course with a lab)
In HB, this GEP requirement is met through the Major course requirements.

Humanities (6 credit hours selected from two different disciplines/course prefixes)
Choose from the University approved GEP Humanities course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.

Social Sciences (6 credit hours selected from two different disciplines/course prefixes)
Choose from the University approved GEP Social Sciences course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.

Health & Exercise Studies (2 credit hours – at least one 100-level Fitness and Wellness Course)
Choose from the University approved GEP Physical Education/Healthy Living course list.

Additional Breadth - (3 credit hours)
Choose from the University approved GEP Humanities course list or the GEP Social Sciences course list or the GEP Visual & Performing Arts course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.

Interdisciplinary Perspectives (5 credit hours)
In HB, 2 credit hours of this GEP requirement is met through Major course requirements. For the remaining 3 credit hours, choose from the University approved GEP Interdisciplinary Perspectives course list. Some courses on this list will also meet the U.S. Diversity or Global Knowledge co-requisites.

The following Co-Requisites must be satisfied to complete the General Education Program requirements:
U.S. Diversity (USD)
Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite.

Global Knowledge (GK)

Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite.

Foreign Language proficiency. - Proficiency at the FL_102 level is required for graduation.