# Human Biology – Bachelor of Science

https://natsci.msu.edu/about/departments-and-programs/human-bio-program.aspx

**Administered by the College of Natural Science Dean’s Office**

## University Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Cr.</th>
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</thead>
<tbody>
<tr>
<td>WRA 101</td>
<td>4</td>
<td>ISS 200 level</td>
<td>4</td>
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<tr>
<td>IAH 201-210</td>
<td>4</td>
<td>ISS 300 level</td>
<td>4</td>
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<tr>
<td>IAH 211 or higher</td>
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## Introductory Science and Math Requirements

### Mathematics

One course from each group (1 and 2):

1. **MTH 124 Survey of Calculus I**
   - MTH 132 Calculus I
   - MTH 152H Honors Calculus I
   - 3

2. **STT 231 Statistics for Scientists**
   - STT 201 Statistical Methods
   - STT 421 Statistics I
   - MTH 126 Survey of Calculus II
   - MTH 133 Calculus II
   - MTH 153H Honors Calculus II
   - 4

### Chemistry

All courses from one of the following groups:

1. **CEM 141 General Chemistry**
   - CEM 142 General & Inorganic Chemistry
   - CEM 161 Chemistry Lab I
   - CEM 162 Chemistry Lab II
   - 4

2. **CEM 151 Principles of Chemistry I**
   - CEM 152 Principles of Chemistry II
   - CEM 161 Chemistry Lab I
   - CEM 162 Chemistry Lab II
   - 3

3. **CEM 181H Honors Chemistry I**
   - CEM 182H Honors Chemistry II
   - CEM 185H Honors Chemistry Lab I
   - 4

### Biology

All courses from one of the following groups:

1. **BS 161 Cell and Molecular Biology**
   - BS 162 Organismal and Population Biology
   - BS 171 Cell and Molecular Biology Lab
   - 3

2. **BS 181H Honors Cell and Molecular Biology**
   - BS 182H Organismal and Population Biology
   - BS 191H Honors Cell and Molecular Biology Lab
   - BS 192H Organismal and Population Lab
   - 2

### Introduction to Science and Math Requirements

**Mathematics**

- One course from each group (1 and 2):
  - **MTH 124 Survey of Calculus I**
  - **STT 231 Statistics for Scientists**

**Chemistry**

- All courses from one of the following groups:
  - **CEM 141 General Chemistry**
  - **CEM 151 Principles of Chemistry I**

**Biology**

- All courses from one of the following groups:
  - **BS 161 Cell and Molecular Biology**
  - **BS 181H Honors Cell and Molecular Biology**

**Physics**

- All courses from one of the following groups:
  - **PHY 221 Studio Physics for Life Scientists I**
  - **PHY 222 Studio Physics for Life Scientists II**

**Foundational Course Requirements**

### Organic Chemistry

All of the following:

- **CEM 251 Organic Chemistry I**
- **CEM 252 Organic Chemistry II**
- **CEM 255 Organic Chemistry Lab**

### Biochemistry

- **BMB 401 Comprehensive Biochemistry**

### Genetics

- **IBIO 341 Fundamental Genetics**

### Anatomy

One of the following courses:

1. **ANTR 350 Human Gross Anatomy**
2. **IBIO 320 Developmental Biology**
3. **IBIO 328 Comparative Anatomy (W)**

### Physiological Course Requirements

### Human Biology

- **HBIO 495 Capstone in Human Biology**

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If more than one Advanced Cell Biology Option is taken, the second course can be applied as a selective. Do not take both BLD 434 and MMG 451, these are considered equivalent.
Selectives

Twelve credits from the following selective courses:
*(DOES NOT INCLUDE COURSES USED TO FULFILL ANOTHER AREA OF THE MAJOR REQUIREMENTS)*

**Anthropology**
- ANP 204 Introduction to Medical Anthropology**
- ANP 206 Introduction to Physical Anthropology**
- ANP 270 Women and Health: Anthropological and International Perspectives**
- ANP 370 Culture, Health, and Illness
- ANP 425 Issues in Medical Anthropology
- ANP 441 Osteology and Forensic Anthropology
- ANP 443 Human Adaptability

**Anthropology**
- ANTR 355 Human Gross Anatomy Laboratory

**Biomedical and Laboratory Diagnostics**
- BLD 204 Mechanisms of Disease (Must be taken before senior status, 88+ credits)
- BLD 213L Clinical Laboratory Methods
- BLD 324 Fundamentals of Hematology, Hemostasis, and Urinalysis
- BLD 430 Molecular Diagnostics
- BLD 439 Histocompatibility and Immunogenetics
- BLD 446 Immunobiology of Neoplasia
- BLD 447 Immunomodulation and Immunotherapy

**Epidemiology**
- EPI 390 Disease in Society: Introduction to Epidemiology & Public Health**

**Human Biology**
- HBIO 295 Human Biology and Society

**Human Medicine**
- HM 101 Introduction to Public Health**

**Human Nutrition**
- HNF 310 Nutrition in Medicine for Pre-Health Professionals

**Integrative Biology**
- IBIO 408 Histology
- IBIO 445 Evolution (W)
- IBIO 450 Cancer Biology (W)

**Microbiology**
- MMG 301 Introductory Microbiology
- MMG 302 Introductory Lab for General and Allied Health Microbiology
- MMG 365 Medical Microbiology
- MMG 365L Medical Microbiology Laboratory
- MMG 404 Human genetics
- MMG 431 Microbial Genetics
- MMG 461 Molecular Pathogenesis
- MMG 465 Advanced Medical Microbiology
- MMG 465L Advanced Medical Microbiology Laboratory

**Neurobiology**
- NEU 300 Neurobiology
- NEU 310 Psychology and Biology of Human Sexuality

**Pharmacology**
- PHM 321 Common Drugs
- PHM 350 Introductory Human Pharmacology
- PHM 351 Fundamentals of Drug Safety
- PHM 422 Fundamentals of Neuropsychology
- PHM 430 Human Pharmacology
- PHM 431 Pharmacology of Drug Addiction**
- PHM 440 Principles of Drug Action
- PHM 450 Introduction to Chemical Toxicology
- PHM 461 Tropical Medicine Pharmacology
Physiology
   PSL 311L Physiology Laboratory for Pre-Health Professionals  2

Psychology
   PSY 320 Health Psychology  3
   PSY 333 Neurobiology of Food Intake  3

**No prerequisites**

With the approval of the director of the human biology major, a maximum of 3 credits in research (HBIO 498), internship (HBIO 497) or independent study (HBIO 496) courses may be used to satisfy this requirement.

Additional Graduation Requirements:

- 300-400 Level Courses: 30 credits
- Students must reach 120 credits (or 123 credits if starting in MTH 1825)
- Students must have a least a 2.0 cumulative GPA and at least a 2.0 cumulative Major GPA

Please monitor your Degree Progress on [https://student.msu.edu/](https://student.msu.edu/)
The following is a list of courses required for the Human Biology major. This is only a sample guide.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td>CEM 141/161</td>
<td>CEM 142/162</td>
<td>CEM 251</td>
<td>CEM 252/255</td>
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<tr>
<td>MATH</td>
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<td>BS 161/171</td>
<td>BS 162/172</td>
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<th>Fall</th>
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<tr>
<td>PSL 310 (Or PSL 431 and 432 in Spring)</td>
<td>Anatomy Option</td>
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<tr>
<td>PHY 221</td>
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<tr>
<td>ISS 300 Level (University Requirement)</td>
<td>BMB 401</td>
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<tr>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>Human Biology Required Selective (Or in the Fall)</td>
<td>IBIO 341</td>
</tr>
<tr>
<td>Elective</td>
<td>HBIO 495</td>
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***Many courses are offered in the summer. Consult with your advisor to determine if summer courses would be a good option for you.***