

# Human Biology, Health, and Society

2022-2023

The requirements listed below pertain to all students matriculating in August 2022 and January 2023.

All of the following sections are required to be completed to graduate.

Courses in areas 1-18 must be taken for a Letter Grade.

Overall Credits (REQUIRED)		
Total: 120 credits	Human Ecology: 43 credits (courses from DEA, FSAD, HD, NS, PAM at any level or HE at the 3000/4000 level)	Human Ecology, outside the major: 9 credits (from DEA, FSAD, HD, PAM any level, or HE at the 3000/4000 level)

**1. HBHS Introductory Course (3 credits)**

NS 1400 Introduction to Human Biology, Health, and Society

**2. HBHS Survey Course (3 credits)**

NS 1150 Nutrition, Health, and Society **OR**

NS 1220 Nutrition and the Life Cycle (3 cr)

**3. Social Science Perspective on Health Selectives (6+ credits)**

*Courses should cover some aspect of health (including nutrition) from a social science perspective. More than half of the course content must be devoted to consideration of health/life course/disease issues from a social science (e.g. sociology, anthropology, psychology, economics, communications, and other social science disciplines). Courses with a focus on public policy related to health or education/counseling related to health are included in this category. See the [Requirements for HBHS majors](#) for regular updates to course options and information; new options are available to all class years.*

NS 2450 Social Science Perspectives on Food and Nutrition (3 cr)

NS 4250 Nutrition Communications and Counseling (3 cr)

NS 4450 / 6455, AEM 4450 / 6455 Toward a Sustainable Global Food System: Food Policy for Developing Countries (3 cr)

NS 4480 / 6480 Economics of Food and Malnutrition (3 cr)

NS 4500 Public Health Nutrition (3 cr)

NS 4570 / ECON 3910 Health, Poverty, and Inequality: A Global Perspective (3 cr)

COMM 4760 Population Health Communication (3 cr)

GDEV/ LSP 2200 Sociology of Health and Ethnic Minorities (3 cr)

GDEV 3020 Political Ecologies of Health (3 cr)

GDEV 3111 / BSOC 3111 / SOC 3130 / STS 3111 Sociology of Medicine (3 cr)

HD 2180 Human Development: Adulthood and Aging (3 cr)

HD 2300 Cognitive Development (3 cr)

HD 2600 / PSYCH 2750 Introduction to Personality (3 cr)

HD 3290 Self-Regulation Across the Life Span (3 cr)

HD 3300 Developmental Psychopathology (3 cr)

HD 3490 The Science of Well Being (3 cr)

HD 3620 Human Bonding (3 cr)

HD 3700 / PSYCH 3250 Adult Psychopathology (3 cr)

HD 4590 Life Transitions Across the Life Span (3 cr)

HD 4770 Psychopathology in Great Works of Literature (3 cr)

PAM 2350 The U.S. Health Care System (3 cr)

PAM 3110 Pharmaceutical Management and Policy (3 cr)

PAM 3280 Fundamentals of Population Health (3 cr)

PAM 3780 Sick Around the World? Comparing Health Care Systems Around the World (3 cr)

PAM 3870 / 5870 Economic Evaluations in Health Care (3 cr)

PAM 4280 / ECON 3710 Economics of Risky Health Behaviors (3 cr)

#### 4. Natural Science Perspective on Health Selectives (6+ credits)

Courses should cover some aspect of health (including nutrition) from a life science perspective. More than half of the course content must be devoted to consideration of health/life course/disease issues from a life science/biological perspective (e.g. biochemistry, molecular biology, physiology, neuroscience, evolution, animal science, food science, plant sciences, and other natural science disciplines). Course work taken for HBHS Selectives may not also count for Biology Electives. See the [Requirements for HBHS majors](#) for regular updates to course options and information; new options are available to all class years.

**NS 3030** Nutrition, Health and Vegetarian Diets (3 cr)

**NS 3060** Nutrition and Global Health (3 cr)

**NS 3150** Obesity and Regulation of Body Weight (3 cr)

**NS 3310** Nutrient Metabolism (4 cr)

**NS 3320** Methods in Nutritional Sciences (3 cr)

**NS 3450** Introduction to Physiochemical and Biological Aspects of Food (3 cr)

**NS 4200** Diet and the Microbiome (3 cr)

**NS 4300** Proteins, Transcripts, and Metabolism: Big Data in Molecular Nutrition (3 cr)

**NS 4410** Nutrition and Disease (4 cr)

**NS 4420** Implementation of Nutrition Care (3 cr; *enrollment restricted – priority to Dietetics students*)

**NS 6140** Topics in Maternal and Child Nutrition (3 cr)

**NS 6310** Micronutrients: Function, Homeostasis and Assessment (2-4 cr)

**NS 6320** Regulation of Macronutrient Metabolism (4 cr)

**BIOMG 4390** Molecular Basis of Disease (3 cr)

**BIOMI 2500** Public Health Microbiology (3 cr)

**BIOMI 2600** Microbiology of Human Contagious Diseases (3 cr)

**BIOMI 2950** Biology of Infectious Disease: From Molecules to Ecosystems (3 cr)

**BIOMI 3210** Human Microbes and Health (3 cr)

**BIONB 3215 / FGSS 3210 / LGBT 3210** Gender and the Brain (3 cr)

**FSAD 4390** Biomedical Materials and Devices for Human Body Repair (3 cr)

**HD 2200** The Human Brain and Mind: An Introduction to Cognitive Neuroscience (3 cr)

**HD 3250** Neurochemistry of Human Behavior (3 cr)

**HD 3660** Affective and Social Neuroscience (3 cr)

**MSE 4610** Biomedical Materials and Their Applications (3 cr)

**PLBIO 2100** Medical Ethnobotany (3 cr)

#### 5. Nutritional Science Perspective on Health Selectives (3-4 credits)

Courses should cover some aspect of health (including nutrition) from a nutritional science perspective. More than half of the course content must be devoted to consideration of health/life course/disease issues from a nutritional science perspective. Course work taken for HBHS Selectives may not also count for Biology Electives. See the [Requirements for HBHS majors](#) for regular updates to course options and information; new options are available to all class years.

**NS 3030** Nutrition, Health and Vegetarian Diets (3 cr)

**NS 3060** Nutrition and Global Health (3 cr)

**NS 3150** Obesity and Regulation of Body Weight (3 cr)

**NS 4200** Diet and the Microbiome (3 cr)

**NS 4300** Proteins, Transcripts, and Metabolism: Big Data in Molecular Nutrition (3 cr)

**NS 4410** Nutrition and Disease (4 cr)

**NS 4420** Implementation of Nutrition Care (3 cr; *enrollment restricted – priority to Dietetics students*)

**NS 4450 / AEM 4450** Toward a Sustainable Global Food System: Food Policy for Developing Countries (3 cr)

**NS 4480** Economics of Food and Malnutrition (3 cr)

**NS 4500** Public Health Nutrition (3 cr)

#### 6. Introductory Chemistry (8 credits)

Choose **one** of the following options:

(a) **CHEM 2070** General Chemistry I (4 cr) and **CHEM 2080** General Chemistry II (4 cr) <sup>1</sup>

(b) (AP Chemistry score of 5 or IB HL Chemistry score of 6 or 7) and **CHEM 2080** General Chemistry II (4 cr) <sup>2</sup>

(c) (AP Chemistry score of 5 or IB HL Chemistry score of 6 or 7) and **CHEM 2150** Honors General and Inorganic Chemistry (4 cr) <sup>2,3</sup>

<sup>1</sup> Recommended for nearly all students, especially those on or considering a pre-health (e.g. pre-med) track.

<sup>2</sup> Students may use an AP Chemistry score of 5 or an IB HL Chemistry score of 6 or 7 to place out of CHEM 2070. Pre-health (e.g. pre-med) students should not use AP scores to fulfill chemistry requirements. Students who take CHEM 2070 forfeit AP or IB credit.

<sup>3</sup> Students should only select option (c) if they are very strong in chemistry and are not considering a pre-health (e.g. pre-med) track.

## 7. Introductory Biology (8 credits)

Choose **one** of the following labs:

- (a) **BIOG 1500** Investigative Lab (2 cr) **OR**
- (b) **BIOSM 1500** Investigative Marine Biology Lab (3 cr)

**AND** choose **two out of the three** lecture options<sup>1</sup>:

- (a) **BIOMG 1350** Cell and Development (3 cr)
- (b) **BIOG 1440** Comparative Physiology (3 cr) **OR**<sup>2</sup>  
**BIOG 1445** Comparative Physiology (autotutorial) (4cr)
- (c) **BIOEE 1610** Ecology and the Environment (3 cr) **OR**<sup>2</sup>  
**BIOEE 1780** Evolution and Diversity (3 cr)

<sup>1</sup> Students may use an AP Biology score of 5 or IB HL Biology score of 7 to place out of one introductory biology lecture. Pre-health (e.g. pre-med) students should not use AP scores to fulfill biology requirements.

<sup>2</sup> Cannot take both courses within one category to fulfill this requirement

## 8. Physics (4 credits)<sup>1</sup>

**PHYS 1101** General Physics I (4 cr) **OR**

**PHYS 2207** Fundamentals of Physics (4 cr)

<sup>1</sup> Students interested in pre-health tracks should also take **PHYS 1102** General Physics II **OR** **PHYS 2208** Fundamentals of Physics.

## 9. Organic Chemistry Lecture (3-8 credits)<sup>1</sup>

Choose **one** of the following:

- (a) **CHEM 1570** Elementary Organic Chemistry (3 cr, *not for pre-health*) **OR**
- (b) **CHEM 3530** Principles of Organic Chemistry (4 cr) **OR**
- (c) **CHEM 3570** Organic Chemistry for the Life Sciences I (3 cr) **AND** **CHEM 3580** Organic Chemistry for the Life Sciences II (3 cr) **OR**<sup>1</sup>
- (d) **CHEM 3590** Honors Organic Chemistry I (4 cr) **AND** **CHEM 3600** Honors Organic Chemistry II (4 cr)<sup>2</sup>

<sup>1</sup> Students interested in pre-health tracks should take a two-course sequence of organic chemistry lectures (option c or d above).

<sup>2</sup> Students who select options c or d above must take both courses in sequence; one course alone will not fulfill requirement).

## 10. Organic Chemistry Lab (2-4 credits)

- (a) **CHEM 2510** Introduction to Experimental Organic Chemistry (2 cr) **OR**
- (b) **CHEM 3010** Honors Experimental Chemistry (4 cr)

## 11. Physiology (3-4 credits)<sup>1</sup>

Choose **one** of the following:

- (a) **NS 3410** Human Anatomy and Physiology (4 cr) **OR**
- (b) **BIOAP 3110** Animal Physiology (3 cr)

<sup>1</sup> Pre-health students might also consider taking **NS 3420** Human Anatomy and Physiology Lab (2 cr), which also counts toward advanced biology elective requirement.

## 12. Biochemistry (4-6 credits)

Choose **one** of the following:

- (a) **NS 3200** Introduction to Human Biochemistry (4 cr) **OR**
- (b) **BIOMG 3300** Principles of Biochemistry (4 cr) **OR**
- (c) **BIOMG 3310** Principles of Biochemistry: Proteins and Metabolism (3 cr) **AND** **BIOMG 3320** Principles of Biochemistry: Molecular Biology (2 cr) **OR**
- (d) **BIOMG 3310** Principles of Biochemistry: Proteins and Metabolism (3 cr) **AND** **BIOMI 2900** General Microbiology (3 cr) **OR**
- (e) **BIOMG 3330** Principles of Biochemistry: Proteins, Metabolism, and Molecular Biology (4 cr) **OR**
- (f) **BIOMG 3350** Principles of Biochemistry: Proteins, Metabolism, and Molecular Biology (4 cr)

## 13. Biology Electives (6 credits)

6 additional credits selected from courses that relate to human biology. Any course that requires one year of introductory biology or above (e.g. another advanced biology course) as a pre-requisite fulfills this category; the below list only provides examples. Course work taken for Biology Electives may not also count for Biochemistry or HBHS Selectives. May not include Special Studies or independent research credits (e.g., NS 4000, 4010, 4020, 4030, or 4990 or non-DNS equivalent). Possible areas of study include:

- Genetics, recommended (e.g. **BIOMG 2800, 2820**)
- Microbiology (e.g. **BIOMI 2900, VETMI 4310**)
- Neurobiology (e.g. **BIONB 2210, 2220, 4280**)
- Cell Biology (e.g. **BIOMG 4320**)
- Physiology (e.g. **BIOAP 4890, NS 3410** or **BIOAP 3110** if both are taken)
- Biochemistry (may **not** include **BIOMG 3300, 3310, or 3320, 3350, or NS 3200**)
- Nutrition (e.g. **NS 3030, 3310, 3420, 4200, 4300, or 4410**)

**14. First Year Writing Seminars** (6 credits)

**Note:** The 2 required first year writing seminar courses must be completed during the first two semesters at Cornell.

**15. Social Sciences** (6 credits)

Choose **one** course in any **two** of the following four areas:

*Anthropology*

**ANTHR 1400** The Comparison of Cultures (3 cr)

*Economics*

**ECON 1110** Introductory Microeconomics (3 cr)

**ECON 1120** Introductory Macroeconomics (3 cr)

*Psychology*

**HD 1120** People in Perspective: Brain, Mind, Society **OR** **PSYCH 1101** Introduction to Psychology (3 cr)

**HD 1150** Human Development: Infancy and Childhood (3 cr)

**HD 1170** Adolescence and Emerging Adulthood (3 cr)

*Sociology*

**SOC 1101** Introduction to Sociology (3 cr)

**16. Humanities** (3-4 credits)

Choose any course with the Course Distribution Historical Analysis (HA), Literature and the Arts (LA), or Cultural Analysis (CA).

**17. Calculus/Advanced Math** (3-4 credits)

Choose **one** of the following **Calculus/Advanced Math** courses:

(a) **MATH 1105** Finite Mathematics for the Life and Social Sciences (3 cr)

(b) **MATH 1106** Calculus for the Life and Social Sciences (3 cr)

(c) **MATH 1110** Calculus I (4 cr)

(d) **MATH 1120** Calculus II (4 cr)

(e) A score of **4 or 5** on the AB or BC Calculus AP Exam<sup>1</sup>

<sup>1</sup> See below under *Statistics*.

**18. Statistics** (3-4 credits)

Choose **one** of the following:

(a) **STSCI 2150** Introductory Statistics for Biology (4 cr) (*recommended*) **OR**

(b) **PAM 2100** Introduction to Statistics (4 cr) **OR**

(c) **AEM 2100** Introductory Statistics (4 cr) **OR**

(d) **BTRY 3010** Biological Statistics I (4 cr) **OR**

(e) **ILRST/STSCI 2100** Introductory Statistics (4 cr) **OR**

(f) **MATH 1710** Statistical Theory and Application in the Real World (4 cr) **OR**

(g) **PSYCH 2500** Statistics and Research Design (3-4 cr) **OR**

(h) **SOC 3010** Statistics for Sociological Research (4 cr)

(i) A score of **4 or 5** on the Statistics AP Exam<sup>1</sup>

<sup>1</sup> *DNS students must take either Calculus/Advanced Math or Statistics at Cornell unless they have earned a score of 4 or 5 on the BC Calculus AP Exam. Students in this case may use AP credit from each exam for both Calculus/Advanced Math and Statistics.*

**19. Electives** (Variable)

Any courses that are not taken in Areas 1-18 above, count as Electives.

**20. Physical Education Requirement** (2 courses)

Physical Education must be completed in order to graduate. However, physical education does not count toward college and university minimum credit requirements for full-time status, nor does it count towards the 120 credits required for graduation.

**21. Swim Test Requirement**

A successful swim test must be completed in order to graduate.

## College Polices:

- **120 Overall Credits**
  - Students must complete 120 credits toward graduation.
  - A maximum of 15 credits of AP credit and in absentia credit can count towards the 120 total credits.
  - 15 credits of Study Abroad/Exchange, Cornell-In-Washington or 12 credits of Capital semester can count towards total electives.
- **43 HE Credits**
  - Students must complete a minimum of 43 HE credits.
  - HE non-departmental courses at the 2000-level and below do not count toward the 43 HE credits.
  - Students must enroll in a minimum of one 3-credit course each semester in HE for their first four semesters, excluding winter and summer sessions (beginning with students entering in fall 2022).
- **9 HE Credits outside the major**
  - Students must complete a minimum of 9 HE credits outside of NS. These credits are given for any Human Ecology course outside your major (except 4030). These can be taken S/U only if course is NOT used to fulfill a curriculum requirement [Areas 1-18].
- **Pass/Fail Courses [S/U]**
  - S/U grading option may NOT be used for any required course [Areas 1-18] unless it is the only grade option offered for those courses.
  - S/Us MAY be used for the 9 HE Credits outside the major and for electives in Area 19.
  - Students may apply no more than 12 credits of S/U towards graduation requirements. If a required course is only offered S/U, it will not count towards this limit. Students may take more S/Us if they choose, but the additional credit will not be applied towards graduation.
  - The **deadline for changing grade options is the 57<sup>th</sup> calendar day of the semester**, the same as the “drop” deadline.
- **Special Study Courses [4000, 4010, 4020, 4030]**
  - A maximum of 12 credits of special study course work from Human Ecology or other colleges will count towards the 120 overall credits (e.g. DNS special studies course work includes NS 4000, 4010, 4020, and 4030). Courses will be indicated on the class roster with a Component of either IND or RSC. [Additional credits can be taken but will not be applied.]
  - A maximum of 12 credits of 4000-4030 may count toward the 43 HE credit requirement.
  - A maximum of 3 credits of 4000-4020 (not including 4030) may count towards the 9 credits outside the major requirement as long as the special study is in a department outside the student’s major.
  - Students cannot TA (4030) the same course for credit more than once or take and TA the same course simultaneously. 4030 does not fulfill any requirements towards the major. Registration for 4030 may not exceed 5 credit hours per semester.