

Admission Requirements For This Major

1. New freshmen admitted to USU in good standing qualify for admission to this major.
2. Transfer students from other institutions need a 2.25 transfer GPA and students transferring from other USU majors need a 2.25 total GPA for admission to this major in good standing.

The Program

The public health profession offers many opportunities to work with people at the community level, as well as in the workplace. Typically, public health professionals enter careers oriented to service, teaching, or research to promote the general health and welfare of people and their working and living environments. Historically, public health has focused on the study and prevention of communicable diseases through nutritional factors, immunization, and environmental sanitation. Although still an important focus of public health, the scope of the profession has broadened to include all aspects of disease prevention, environmental protection, and health promotion.

At Utah State University, the Department of Biology offers a course of study leading to the Bachelor of Science degree in Public Health. There are three emphases available within this program.

The **Industrial Hygiene** emphasis prepares students in the anticipation, recognition, evaluation, and control of occupational health hazards in the workplace. The industrial hygienist is responsible for inspection of the working environment; measurement of worker exposures to chemical, physical, and biological hazards, and other factors which contribute to unsuitable working conditions; and for the implementation of control measures to provide a safe and healthful working environment. The Industrial Hygiene emphasis is accredited by the Applied Science Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore MD 21202-4012, tel. (410) 347-7700. Graduates from ABET accredited programs are granted benefits toward both Certified Industrial Hygienist (CIH) and Certified Safety Professional (CSP) professional certification examinations.

The **Environmental Health** emphasis prepares students for a career in the area of environmental health and protection. The environmental health and protection professional is primarily concerned with the investigation and prevention of health-related problems within a community, such as air and water pollution, solid and hazardous waste disposal, food-borne illnesses in public eating establishments, water and wastewater treatment, and insect and rodent vectors of disease. Environmental health graduates are qualified to take the Registered Environmental Health Specialist/Sanitarian examination.

The **Public Health Education** emphasis prepares students to educate people about a variety of health issues. The public health educator assists people in developing positive health attitudes and behaviors. The public health education profession includes various responsibilities, such as teaching, research, program development, administrative duties, speaking before civic groups, arranging publicity campaigns, and coordinating the activities of various service organizations with those of governmental or community agencies. The public health education specialist is a primary source and disseminator of health education materials and programs. Public Health Education graduates are qualified to take the Certified Health Education Specialist (CHES) examination.

Career Opportunities

Public health professionals are involved in research, teaching, administration, laboratory services, and field work. Graduates in Public Health typically find work in areas such as sanitation, occupational safety and health, health education, mental health, social work, laboratory work, administration, nursing, and nutrition. Places of employment include various federal, state, and local government agencies, insurance companies, industrial settings, hospitals, nursing and personal care homes, and health management firms.

Biology Advising Center

The Department of Biology department head, the director of undergraduate studies, and advisors are available to provide all undergraduate majors with additional information regarding specific programs and career opportunities. The Biology Advising Center and the director of undergraduate studies are located in BNR 101. The advisor for Public Health majors is David Wallace, BNR 333, (435) 797-7155, dwallace@biology.usu.edu. Additional information and an "Ask an Advisor" e-mail service are on the web at: <http://www.biology.usu.edu/>

Undergraduate Degrees Offered Through This Department

Biology: Bachelor of Science (BS), Bachelor of Arts (BA)

Emphases: Biology

Cellular/Molecular

Ecology/Biodiversity

Environmental

Composite Teaching—Biological Science: BS, BA

Public Health: BS

Emphases: Industrial Hygiene

Environmental Health

Public Health Education

Graduate Degrees Offered Through This Department

Biology: MS and PhD

Ecology: MS and PhD

Toxicology: MS and PhD

Academic Advisement

All students should contact their academic advisor for assistance with course selection, program planning, and meeting graduation requirements. If students do not know who their advisor is, they should contact their department, college, or the Office of University Advising.

Graduation Requirements: BS Degree in Public Health

Candidates for the **Bachelor of Science Degree** in the Department of Biology must meet all of the minimum requirements for the University, College of Science, and Department.

All candidates for a BS degree should refer to the Utah State University *General Catalog* for more detailed information and review this requirement sheet.

Minimum University Requirements*

Total credits	120
Grade point average (most majors require higher GPA)	2.00 GPA
Credits of C- or better	100
Credits of upper-division courses (#3000 or above)	40
USU credits	30
(20 of which must be upper division, including 10 required by major)	
Completion of approved major program of study	See department

Credits in minor (if required by department)	12
Credits in American Institutions (ECON 1500; HIST 1700, 2700, or 2710; POLS 1100; or USU 1300)	3
University Studies requirements	See below

*Colleges and departments may require more credits or a higher GPA. See requirements on this sheet.

Minimum College of Science Requirements

All College requirements are met by completing the Departmental degree requirements; no additional coursework is required.

Changes in Graduation/Catalog Requirements

Students who can complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education/University Studies requirements in effect when they initially enrolled and (2) the major requirements in effect when they officially declared their major, even though there may have been changes in General Education/University Studies and major requirements since that time.

Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education/University Studies and major requirements evaluated and approved by their department head and dean.

Undergraduate Course Expiration Policy

Coursework (including transfer credit) that is more than 10 years old and is required by the major may be disallowed by the student's department. Students will have an opportunity to revalidate coursework that is disallowed.

University Studies Requirements for Public Health Major

Note: Approved University Studies courses and requirements are listed in the back section of each semester's *Schedule of Classes*.

General Education Requirements (30-34 credits)

Competency Requirements (9-10 credits)

Communications Literacy (CL1 and CL2) (6 credits)

ENGL 1010 (CL1) (3 credits) or satisfactory AP, CLEP, IBO, ACT, or SAT score

AND

ENGL 2010 (CL2) (3 credits) or satisfactory IBO score

Quantitative Literacy (QL) (3-4 credits)¹

MATH 1030 or 1050 or STAT 1040 (3-4 credits)

OR

One MATH or STAT course requiring MATH 1050 as a prerequisite

OR

Satisfactory AP, CLEP, IBO, ACT, or SAT score

Computer and Information Literacy (0 credits)

Passing grade on six computer and information literacy related examinations.

Breadth Requirements (18-20 credits)¹

Select at least one approved course from one of the following six categories: **American Institutions (BAI)**, **Creative Arts (BCA)**, **Humanities (BHU)**, **Life Sciences (BLS)**¹, **Physical Sciences (BPS)**¹, and **Social Sciences (BSS)**. At least two of the six breadth courses must be University Studies courses with a **USU prefix** (excluding USU 1000, 1010, 1100, 3330, 4900, and 6900). (CLEP or AP credit may be used.)

Exploration Requirement (3-4 credits)

Choose an additional class from one of the following General Education categories: QL, BAI, BCA, BHU, BLS, BPS, or BSS. The required chemistry courses, in conjunction with the required physics courses, will fulfill the Exploration Requirement for students in the Public Health major.

Depth Education Requirements

Communications Intensive (CI) (2 courses)

PUBH 5500, along with another course having CI designation (such as NFS 5110 or SPCH 1020), will meet this requirement.

Quantitative Intensive (QI) (1 course)

STAT 3000 will meet this requirement.

Depth Course Requirements (4 credits minimum, including 2 credits minimum completed in each of two courses)

Complete at least 2 credits in approved 3000-level or above courses from each of the following two categories: **Humanities and Creative Arts (DHA)** and **Social Sciences (DSS)**.

Public Health Major Requirements

To graduate, a candidate for any bachelor's degree offered by the Department of Biology must maintain a grade point average of 2.25 in all Department of Biology (BIOL or PUBH prefix) courses required for the major and a grade of C- or better in BIOL 1610 and 1620. The *Pass-Fail* option is not acceptable for any course required for the degree, but D grades are permitted within the restrictions of the 2.25 GPA. The Industrial Hygiene Emphasis includes sufficient chemistry coursework for students to also complete a minor in chemistry.

Laboratory fees required for some Biology Department courses are used to purchase expendable laboratory items and other materials required for successful completion of laboratory assignments.

Note: Effective Summer Semester 2006, some course numbers changed, due to House Bill 320 (Common Course Numbering). Course numbers used *prior* to Summer Semester 2006 are shown in parentheses, following *formerly*.

Industrial Hygiene Emphasis

Required Biology Courses (16 credits)

Credits

- BIOL 1610** Biology I (F) 4
(formerly BIOL 1210)
- BIOL 1620 (BLS)** Biology II (Sp) 4
(formerly BIOL 1220)
- BIOL 2420** Human Physiology (F,Sp,Su) 4
(formerly BIOL 2000)
- BIOL 3300** General Microbiology (F,Sp) 4

Required Physical Science Courses (30 credits)

- CHEM 1210** Principles of Chemistry I (F,Sp) 4
- CHEM 1215** Chemical Principles Laboratory I (F,Sp) 1
(formerly CHEM 1230)
- CHEM 1220 (BPS)** Principles of Chemistry II (F,Sp,Su) 4
- CHEM 1225** Chemical Principles Laboratory II (F,Sp) 1
(formerly CHEM 1240)
- CHEM 2300²** Principles of Organic Chemistry (F) 3
- CHEM 2315²** Organic Chemistry Laboratory I (F) 1
(formerly CHEM 2330)
- CHEM 3000 (QI)** Quantitative Analysis (F) 3
(formerly CHEM 3600)
- CHEM 3005** Quantitative Analysis Laboratory (F) 1
(formerly CHEM 3610)
- CHEM 3700** Introductory Biochemistry (Sp) 3
- CHEM 3710** Introductory Biochemistry Laboratory (Sp) 1

- PHYS 2110** The Physics of Living Systems I (4 cr) **and**
- PHYS 2120 (BPS)** The Physics of Living Systems II (4 cr) 8
Or
- PHYS 2210 (QI)** General Physics—
Science and Engineering I (4 cr) **and**
- PHYS 2220 (BPS/QI)** General Physics—Science and
Engineering II (4 cr) 8

Mathematics and Statistics Requirement (7 credits)

- MATH 1210 (QL)**³ Calculus I (F,Sp,Su) 4
- STAT 3000 (QI)** Statistics for Scientists (F,Sp,Su) 3

¹Public Health majors complete the Quantitative Literacy Competency with MATH 1210, complete the Physical Sciences Breadth Requirement with the required chemistry or physics coursework, and complete the Life Sciences Breadth Requirement with BIOL 1620.

²Students considering graduate or professional school and those who want a stronger chemistry background should *replace* CHEM 2300 and 2315 with the two-semester Organic Chemistry series (CHEM 2310, 2315, 2320, and 2325, 10 total credits).

³Students should be certain that they have the proper background to enroll in MATH 1210. See the *General Catalog* for prerequisites or contact the Department of Mathematics and Statistics.

Required Program Courses (32 credits)	Credits
<input type="checkbox"/> PUBH 3310 Occupational Health and Safety (F)	3
<input type="checkbox"/> PUBH 3610 Environmental Management (F)	3
<input type="checkbox"/> PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering (F)	2
<input type="checkbox"/> PUBH 4040 Fundamentals of Epidemiology (Sp)	3
<input type="checkbox"/> PUBH 4310 Industrial Hygiene Recognition of Hazards (F)	4
<input type="checkbox"/> PUBH 4320 Industrial Hygiene Chemical Hazard Evaluation (Sp)	3
<input type="checkbox"/> PUBH 4330 Industrial Hygiene Physical Hazards (Sp)	3
<input type="checkbox"/> PUBH 4380 Industrial Hygiene Internship (F,Sp,Su)	3
<input type="checkbox"/> PUBH 5330 (QI) Industrial Hygiene Chemical Hazard Control (F)	2
<input type="checkbox"/> PUBH 5500 (CI) Public Health Management (F,Sp)	2
<input type="checkbox"/> ADVS 5400 Environmental Toxicology (Sp)	3

Elective Options (select 5 credits)	
<input type="checkbox"/> BIOL 3060 (QI) Principles of Genetics (F,Sp,Su)	4
(formerly BIOL 3200)	
<input type="checkbox"/> CEE 5610 Environmental Quality Analysis (F)	3
<input type="checkbox"/> MHR 3110 (DSS) ⁴ Managing Organizations and People (F,Sp,Su)	3
<input type="checkbox"/> MHR 4630 ⁴ Human Resource Management (F,Sp)	3
<input type="checkbox"/> PUBH 4300 Industrial Hygiene Seminar (F)	1-2
<input type="checkbox"/> PUBH 4410 Industrial Safety (Sp)	3
<input type="checkbox"/> PUBH 5340 Industrial Hygiene and Safety Programs (Sp)	2
<input type="checkbox"/> PUBH 5670 Hazardous Chemicals Handling and Safety (Sp)	2
<input type="checkbox"/> PUBH 5730 Analysis and Fate of Environmental Contaminants (F)	3
<input type="checkbox"/> PUBH 5790 Accident and Emergency Management (Sp)	3

⁴MHR 3110 and 4630 are intended for students who are pursuing a minor in Human Resource Management.

Environmental Health Emphasis

Required Biology Courses (19 credits)	Credits
<input type="checkbox"/> BIOL 1610 Biology I (F)	4
(formerly BIOL 1210)	
<input type="checkbox"/> BIOL 1620 (BLS) Biology II (Sp)	4
(formerly BIOL 1220)	
<input type="checkbox"/> BIOL 2220 General Ecology (F,Sp)	3
<input type="checkbox"/> BIOL 2420 Human Physiology (F,Sp,Su)	4
(formerly BIOL 2000)	
<input type="checkbox"/> BIOL 3300 General Microbiology (F,Sp)	4

Required Physical Science Courses (22 credits)	
<input type="checkbox"/> CHEM 1210 Principles of Chemistry I (F,Sp)	4
<input type="checkbox"/> CHEM 1215 Chemical Principles Laboratory I (F,Sp)	1
(formerly CHEM 1230)	
<input type="checkbox"/> CHEM 1220 (BPS) Principles of Chemistry II (F,Sp,Su)	4
<input type="checkbox"/> CHEM 1225 Chemical Principles Laboratory II (F,Sp,Su)	1
(formerly CHEM 1240)	
<input type="checkbox"/> CHEM 2300 ⁵ Principles of Organic Chemistry (F)	3
<input type="checkbox"/> CHEM 2315 ⁵ Organic Chemistry Laboratory I (F)	1
(formerly CHEM 2330)	

<input type="checkbox"/> PHYS 2110 The Physics of Living Systems I (4 cr) and	
<input type="checkbox"/> PHYS 2120 (BPS) The Physics of Living Systems II (4 cr)	8
Or	
<input type="checkbox"/> PHYS 2210 (QI) General Physics— Science and Engineering I (4 cr) and	
<input type="checkbox"/> PHYS 2220 (BPS/QI) General Physics—Science and Engineering II (4 cr)	8

Mathematics and Statistics Requirement (7 credits)	
<input type="checkbox"/> MATH 1210 (QL) ⁶ Calculus I (F,Sp,Su)	4
<input type="checkbox"/> STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)	3

⁵Students considering graduate or professional school and those who want a stronger chemistry background should *replace* CHEM 2300 and 2315 with the two-semester Organic Chemistry series (CHEM 2310, 2315, 2320, and 2325, 10 total credits).

⁶Students should be certain that they have the proper background to enroll in MATH 1210. See the *General Catalog* for prerequisites or contact the Department of Mathematics and Statistics.

Required Program Courses (31 credits)	Credits
<input type="checkbox"/> PUBH 3310 Occupational Health and Safety (F)	3
<input type="checkbox"/> PUBH 3610 Environmental Management (F)	3
<input type="checkbox"/> PUBH 3870 (CI) Professional/Technical Writing in Civil and Environmental Engineering (F)	2
<input type="checkbox"/> PUBH 4000 Public Health Field Experience (F,Sp,Su)	3
<input type="checkbox"/> PUBH 4030 Communicable Disease Control (F)	3
<input type="checkbox"/> PUBH 4040 Fundamentals of Epidemiology (Sp)	3
<input type="checkbox"/> PUBH 4310 Industrial Hygiene Recognition of Hazards (F)	4
<input type="checkbox"/> PUBH 5000 Public Health Seminar (Sp)	1
<input type="checkbox"/> PUBH 5500 (CI) Public Health Management (F,Sp)	2
<input type="checkbox"/> PUBH 5730 Analysis and Fate of Environmental Contaminants (F)	3
<input type="checkbox"/> NFS 5110 (CI) Food Microbiology (Sp)	4

Required Electives (select 10 credits)	
<input type="checkbox"/> ADVS 5400 Environmental Toxicology (Sp)	3
<input type="checkbox"/> BIOL 3220 (QI) Field Ecology (F)	2
<input type="checkbox"/> BIOL 3500 (DSC) Plagues, Pests, and People (Sp)	3
<input type="checkbox"/> BIOL 4420 Plant Taxonomy (Sp)	3
<input type="checkbox"/> BIOL 5550 Freshwater Invertebrates (Sp)	3
<input type="checkbox"/> CHEM 3700 Introductory Biochemistry (Sp)	3
<input type="checkbox"/> CHEM 3710 Introductory Biochemistry Laboratory (Sp)	1
<input type="checkbox"/> SOIL 3000 Fundamentals of Soil Science (F,Sp)	4
<input type="checkbox"/> SPCH 1020 (CI) Public Speaking (F,Sp)	3
(formerly SPCH 1050)	

Public Health Education Emphasis

Required Biology Courses (16 credits)	Credits
<input type="checkbox"/> BIOL 1610 Biology I (F)	4
(formerly BIOL 1210)	
<input type="checkbox"/> BIOL 1620 (BLS) Biology II (Sp)	4
(formerly BIOL 1220)	
<input type="checkbox"/> BIOL 2420 Human Physiology (F,Sp,Su)	4
(formerly BIOL 2000)	
<input type="checkbox"/> BIOL 3300 General Microbiology (F,Sp)	4

Required Physical Science Courses (13 credits)	
<input type="checkbox"/> CHEM 1110 (BPS) ⁷ General Chemistry I (F,Sp)	4
<input type="checkbox"/> CHEM 1115 ⁷ General Chemistry Laboratory (Sp)	1
(formerly CHEM 1130)	
<input type="checkbox"/> CHEM 1120 (BPS) ⁷ General Chemistry II (Sp)	4
<input type="checkbox"/> PHYS 1200 (BPS) Introduction to Physics by Hands-on Exploration (4 cr) or	
<input type="checkbox"/> PHYS 1800 (BPS) Physics of Technology (4 cr)	4

Mathematics and Statistics Requirement (7 credits)	
<input type="checkbox"/> MATH 1210 (QL) ⁸ Calculus I (F,Sp,Su)	4
<input type="checkbox"/> STAT 3000 (QI) Statistics for Scientists (F,Sp,Su)	3

⁷Students considering professional school and those who want a stronger chemistry background are encouraged to take CHEM 1210, 1215, 1220, 1225, 2310, 2315, 2320, 2325, 3700, and 3710 as a *substitute* for CHEM 1110, 1115, and 1120.

⁸Students should be certain that they have the proper background to enroll in MATH 1210. See the *General Catalog* for prerequisites or contact the Department of Mathematics and Statistics.

Required Program Courses (15 credits)	Credits
<input type="checkbox"/> PUBH 3120 Family and Community Health (Sp)	3
<input type="checkbox"/> PUBH 4000 Public Health Field Experience (F,Sp,Su)	3
<input type="checkbox"/> PUBH 4030 Communicable Disease Control (F)	3
<input type="checkbox"/> PUBH 4040 Fundamentals of Epidemiology (Sp)	3
<input type="checkbox"/> PUBH 5000 Public Health Seminar (Sp)	1
<input type="checkbox"/> PUBH 5500 (CI) Public Health Management (F,Sp)	2

Required Supporting Courses (30 credits)	Credits
<input type="checkbox"/> HEP 2000 First Aid and Emergency Care (F,Sp,Su)	2
<input type="checkbox"/> HEP 2500 Health and Wellness (F,Sp,Su)	2
<input type="checkbox"/> HEP 3000 Drugs and Human Behavior (F,Su)	3
<input type="checkbox"/> HEP 3900 Social Marketing in Health Education (Sp)	3
<input type="checkbox"/> HEP 4200 (QI) Planning and Evaluation for Health Education (F)	3
<input type="checkbox"/> HEP 5300 Grant Proposal Writing (Sp)	3
<input type="checkbox"/> NFS 1020 (BLS) Science and Application of Human Nutrition (F,Sp,Su)	3
<input type="checkbox"/> NFS 5210 Advanced Public Health Nutrition (Sp)	2
<input type="checkbox"/> SOC 3330 Medical Sociology (F)	3
<input type="checkbox"/> SOC 3500 Social Psychology (F,Sp)	3
<input type="checkbox"/> SPCH 1020 (CI) Public Speaking (F,Sp) (formerly SPCH 1050)	3

Minor Requirements

Biology Minor: The biology minor requires completion of the following: BIOL 1610 and 1620 (both completed with a C- or better grade); and 12 credits chosen from any upper-division (3000-level and above) BIOL prefix elective credits. **Note:** Although BIOL/NR 2220 is a lower-division course, it may be counted toward the 12 elective credits. A minimum cumulative GPA of 2.25 is required for these courses.

Public Health Minor: The Public Health minor requires completion of the following: BIOL 1610 and 1620 (both completed with a C- or better grade); and 12 credits of upper-division (3000-level and above) Public Health elective courses. A minimum GPA of 2.25 is required for these courses.

BioMath Minor: This minor requires mathematics and quantitative biology courses beyond those required for the basic biology degrees. It is an excellent option for students considering graduate work. A minimum GPA of 2.25 is required

for these courses, with a C- or better grade in *both* BIOL 1610 *and* 1620. Biology majors may take this minor through the Mathematics and Statistics Department. The requirements for this minor are described in the Utah State University *General Catalog*. For further information, contact the Biology Advising Center (BNR 101) or Dr. James Haefner (BNR 233).

Departmental Honors

Biology majors enrolled in the Honors Program (or those with at least a 3.5 GPA) may earn Departmental Honors by completing 9 credits of upper-division honors Biology coursework, BIOL 5800H, and a research-based Bachelor's Thesis. For further information, contact Dr. Kimberly A. Sullivan, BNR 313, (435) 797-3713, yejunco@biology.usu.edu.

Requirement Changes

Department of Biology majors will be responsible for meeting the requirements that were in effect when they entered the program. Majors should consult with their advisors on a regular basis to be aware of any changes in requirements.

Materials for Persons with Disabilities

This requirement sheet is available in digital format, recordings, or large print upon request to the USU Disability Resource Center.

For more information contact

Biology Department; Biology-Natural Resources 101; Utah State University; 5305 Old Main Hill; Logan UT 84322-5305; tel. (435) 797-3203; e-mail undergrad_info@biology.usu.edu; <http://www.biology.usu.edu/>

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