GLOBAL DISEASE BIOLOGY, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

Program Office
150 Hutchison Hall; 530-754-4131; gdb-advise@ucdavis.edu; Global Disease Biology (http://gdb.ucdavis.edu/)

Major Program

Approach

The Global Disease Biology (GDB) major offers students the opportunity to study disease and its relationship to the health of people, animals, plants, and the environment. The program uses an integrated approach to advance student understanding of the concept(s) of disease, the societal and personal impacts of past, present and future diseases, and the science behind disease discoveries, causes, evolution, diagnosis, treatment, and prevention. The program recognizes the interconnectedness of people, animals, plants, and the environment and aims to identify and address the fundamental causes of poor health around the world. Managing global disease problems requires a multifaceted, holistic approach to address the full spectrum of human, animal, plant, and environmental health risks (also known as a One Health approach). Throughout a series of core courses, issues related to human, animal, and plant health, along with tools available to solve these problems, will be introduced to provide students with real-world scenarios in which they can apply and advance their creative and critical thinking skills. The major prepares graduates with the knowledge, leadership skills and experiences required to excel in professions associated with global health, the environment, food safety and security, biological safety and security, and health policy. For more information, see Global Disease Biology (http://gdb.ucdavis.edu/).

Program

The Global Disease Biology major provides students with broad preparatory scientific course work, global disease biology core classes, flexibility in upper division electives, and a strong research experience.

Global Disease Biology core classes are intended to be transdisciplinary and focus on concepts that cut across human, animal, and plant diseases offering a unifying ecological and quantitative perspective on disease.

Flexible upper division electives are known as Restricted Electives, which allow students to plan their chosen emphasis of study as part of a required discussion course (GDB 187) and in consultation with their advisor. Students will draw from many undergraduate courses currently offered on disease and health in a way that complements the core courses required for the Global Disease Biology major. You can read more about these electives in the Guide to Restricted Electives from our website (https://gdb.ucdavis.edu/important-documents/).

Strong research experience is acquired in a senior research project, called the GDB Practicum, which each student designs to bridge the disciplines of the major. You can learn more about the Practicum project requirement by reading the Guide to Practicum from our website (https://gdb.ucdavis.edu/important-documents/).

Internships and Careers

The program and interests of each student in solving societal problems guides students to a range of internship and career choices. On and off-campus internship opportunities are available in research laboratories, in field situations, with governmental agencies, with private industry, and in international programs. A degree in Global Disease Biology prepares graduates with the knowledge, leadership skills and experiences required to excel in a vast array of professions associated with areas such as healthcare, medicine, public health, health policy, food safety and security, and nature conservation, as each relates to disease and health of people, animals, plants and the environment in developing and developed countries.

Learn more about our alumni on our GDB Blog (https://gdb.ucdavis.edu/blog/) and Facebook page (https://www.facebook.com/UCD.GDB/)

Faculty

Includes members of the Departments of Plant Pathology in the College of Agricultural & Environmental Sciences, School of Veterinary Medicine, and School of Medicine.

Lead Faculty Advisor

Johan H.J. Leveau, Ph.D., Professor (Plant Pathology)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td><strong>Preparatory Subject Matter</strong></td>
<td></td>
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<tr>
<td>GDB 090</td>
<td>Introduction to Global Disease Biology</td>
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<tr>
<td><strong>Science &amp; Society</strong></td>
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<tr>
<td>SAS 013</td>
<td>Disease &amp; Society</td>
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<tr>
<td><strong>Biological Sciences</strong></td>
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<tr>
<td>BIS 002A</td>
<td>Introduction to Biology: Essentials of Life on Earth</td>
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<tr>
<td>BIS 002B</td>
<td>Introduction to Biology: Principles of Ecology &amp; Evolution</td>
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<tr>
<td>BIS 002C</td>
<td>Introduction to Biology: Biodiversity &amp; the Tree of Life</td>
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<tr>
<td><strong>Chemistry</strong></td>
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<tr>
<td>CHE 002A</td>
<td>General Chemistry</td>
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<tr>
<td>CHE 002B</td>
<td>General Chemistry</td>
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<tr>
<td>CHE 002C</td>
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<tr>
<td><strong>AND</strong></td>
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<tr>
<td>Choose a series:</td>
<td>6-8</td>
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<tr>
<td>CHE 008A &amp; CHE 008B</td>
<td>Organic Chemistry: Brief Course and Organic Chemistry: Brief Course</td>
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<tr>
<td>CHE 118A &amp; CHE 118B</td>
<td>Organic Chemistry for Health &amp; Life Sciences and Organic Chemistry for Health &amp; Life Sciences</td>
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<tr>
<td><strong>Physics</strong></td>
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<tr>
<td>PHY 007A</td>
<td>General Physics</td>
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<tr>
<td>PHY 007B</td>
<td>General Physics</td>
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<tr>
<td><strong>Calculus</strong></td>
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<tr>
<td>MAT 017A</td>
<td>Calculus for Biology &amp; Medicine</td>
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<td>MAT 017B</td>
<td>Calculus for Biology &amp; Medicine</td>
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<tr>
<td>MAT 017C</td>
<td>Calculus for Biology &amp; Medicine</td>
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<tr>
<td><strong>Statistics; choose one:</strong></td>
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STA 013  Elementary Statistics
STA 100  Applied Statistics for Biological Sciences
PLS 120  Applied Statistics in Agricultural Sciences

Preparatory Subject Matter Subtotal  64-66

Depth Subject Matter

Biological Sciences
BIS 101  Genes & Gene Expression  4
Biochemistry
BIS 105  Biomolecules & Metabolism  3
Evolution & Ecology
EVE 100  Introduction to Evolution  4
Microbiology
MIC 102  Introductory Microbiology  3
MIC 103L  Introductory Microbiology Laboratory  2
Pathology, Microbiology & Immunology
PMI 129Y  One Health: Human, Animal & Environment Interfaces  3

Medicine & Epidemiology
VME 158  Infectious Disease in Ecology & Conservation  3

Global Disease Biology
GDB 101  Epidemiology  4
GDB 102  Disease Intervention & Policy  4
GDB 187  Global Disease Biology Seminar  1
GDB 189  Global Disease Biology Senior Research  3
GDB 189D  Global Disease Biology Research Discussion  1

Pathogen/Disease Courses; choose two:  6-8
ENT 153  Medical Entomology
ENT 156  Biology of Parasitism
GDB 103  Microbiome of People, Animals, & Plants
MIC 162  General Virology
or PMI 128  Biology of Animal Viruses
PLP 120  Introduction to Plant Pathology
PMI 127  Medical Bacteria & Fungi

Depth Subject Matter Subtotal  43-45

Restricted Electives

Focused specialty upper division courses as outlined in the latest version of the “Guide to the GDB Restricted Electives” and with approval of an advisor; 25 units is the minimum.

Restricted Electives Subtotal  25

Total Units  132-136

1  GDB 187 provides details about the practicum requirement.
2  GDB 189 provides research units for the practicum project.
3  GDB 189D provides some time to write the practicum report.

Global Disease Biology Core Competencies

Read the Core Competencies for the Global Disease Biology major (https://gdb.ucdavis.edu/competencies/).

First Year High School Admits

Your first quarter at UC Davis will be personalized to you, according to your Placement Exam scores for both Math (https://www.math.ucdavis.edu/undergrad/math_placement/) and Chemistry (https://chemistry.ucdavis.edu/undergraduate/general-chemistry-series/chemistry-placement-requirements/). Please see an advisor to make sure you register for the appropriate courses.

Course  Title  Units

First Year

Fall

SAS 013  Disease & Society  3
CHE 002A  General Chemistry  5
MAT 017A  Calculus for Biology & Medicine  4
SAS 006A  Introduction to Career Discovery Groups (Optional program for career exploration.)  1

Units  13
Total Units  13

To make a 4-year plan, please see the GDB Advising team—you are welcome to talk to your academic advisor or peer advisors! Email us at gdb-advise@ucdavis.edu.

First Year Transfers

Your first quarter plan will be personalized to you, according to how your courses have articulated from your previous institution to UC Davis. Please see an advisor to make sure you register for the appropriate classes!

Course  Title  Units

Third Year

Fall

SAS 013  Disease & Society  3
GDB 090  Introduction to Global Disease Biology  1
BIS 101  Genes & Gene Expression  4
SAS 106  Career Discovery Groups for Transfer Students (Optional program for career exploration.)  1

Restricted Elective  4

Units  13
Total Units  13

1  Restricted Electives make up 25 (or more) units of a student’s GDB major requirements. Read more about them in the Guide to Restricted Electives, which you can download from our website (https://gdb.ucdavis.edu/important-documents/).

To make a full plan for graduation, please see the GDB Advising team—you are welcome to talk to your academic advisor or peer advisors! Email us at gdb-advise@ucdavis.edu.