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/)

Advisor. Bianca Radut (https://gdb.ucdavis.edu/people/bianca-radut/)

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 compliments 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)

Preparatory Subject Matter

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDB 090</td>
<td>Introduction to Global Disease Biology</td>
<td>1</td>
</tr>
<tr>
<td>SAS 013</td>
<td>Disease &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td>CHE 002C</td>
<td>Introduction to Biology: Essentials of Life on Earth</td>
<td>5</td>
</tr>
<tr>
<td>CHE 002B</td>
<td>Introduction to Biology: Principles of Ecology &amp; Evolution</td>
<td>5</td>
</tr>
<tr>
<td>CHE 002C</td>
<td>Introduction to Biology: Biodiversity &amp; the Tree of Life</td>
<td>5</td>
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Chemistry

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CHE 002A</td>
<td>General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHE 002B</td>
<td>General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHE 002C</td>
<td>General Chemistry</td>
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AND

Choose a series: 6-8

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CHE 008A &amp; CHE 008B</td>
<td>Organic Chemistry: Brief Course and Organic Chemistry: Brief Course</td>
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</tr>
<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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Physics

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<tbody>
<tr>
<td>PHY 007A</td>
<td>General Physics</td>
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<tr>
<td>PHY 007B</td>
<td>General Physics</td>
<td>4</td>
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Calculus

<table>
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<tr>
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<tbody>
<tr>
<td>MAT 017A</td>
<td>Calculus for Biology &amp; Medicine</td>
<td>4</td>
</tr>
<tr>
<td>MAT 017B</td>
<td>Calculus for Biology &amp; Medicine</td>
<td>4</td>
</tr>
<tr>
<td>MAT 017C</td>
<td>Calculus for Biology &amp; Medicine</td>
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Statistics; choose one:

<table>
<thead>
<tr>
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<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>MAT 017A</td>
<td>Calculus for Biology &amp; Medicine</td>
<td>4</td>
</tr>
<tr>
<td>MAT 017B</td>
<td>Calculus for Biology &amp; Medicine</td>
<td>4</td>
</tr>
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<td>MAT 017C</td>
<td>Calculus for Biology &amp; Medicine</td>
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Global Disease Biology, Bachelor of Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>STA 013</td>
<td>Elementary Statistics</td>
<td></td>
</tr>
<tr>
<td>or STA 013Y</td>
<td>Elementary Statistics</td>
<td></td>
</tr>
<tr>
<td>STA 100</td>
<td>Applied Statistics for Biological Sciences</td>
<td></td>
</tr>
<tr>
<td>PLS 120</td>
<td>Applied Statistics in Agricultural Sciences</td>
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Preparatory Subject Matter Subtotal 64-66

**Depth Subject Matter**

**Biological Sciences**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>BIS 101</td>
<td>Genes &amp; Gene Expression</td>
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</tr>
<tr>
<td>Biochemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS 105</td>
<td>Biomolecules &amp; Metabolism</td>
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**Evolution & Ecology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>EVE 100</td>
<td>Introduction to Evolution</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC 102</td>
<td>Introductory Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MIC 103L</td>
<td>Introductory Microbiology Laboratory</td>
<td>2</td>
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**Pathology, Microbiology & Immunology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI 129Y</td>
<td>One Health: Human, Animal &amp; Environment Interfaces</td>
<td>3</td>
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</tbody>
</table>

**Medicine & Epidemiology**

<table>
<thead>
<tr>
<th>Course</th>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>VME 158</td>
<td>Infectious Disease in Ecology &amp; Conservation</td>
<td>3</td>
</tr>
</tbody>
</table>

**Global Disease Biology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDB 101</td>
<td>Epidemiology</td>
<td>4</td>
</tr>
<tr>
<td>GDB 102</td>
<td>Disease Intervention &amp; Policy</td>
<td>4</td>
</tr>
<tr>
<td>GDB 187</td>
<td>Global Disease Biology Seminar</td>
<td>3</td>
</tr>
<tr>
<td>GDB 189</td>
<td>Global Disease Biology Senior Research</td>
<td>3</td>
</tr>
<tr>
<td>GDB 189D</td>
<td>Global Disease Biology Research Discussion</td>
<td>1</td>
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</table>

**Pathogen/Disease Courses; choose two:** 6-8

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ENT 153</td>
<td>Medical Entomology</td>
<td></td>
</tr>
<tr>
<td>ENT 156</td>
<td>Biology of Parasitism</td>
<td></td>
</tr>
<tr>
<td>GDB 103</td>
<td>Microbiome of People, Animals, &amp; Plants</td>
<td></td>
</tr>
<tr>
<td>MIC 162</td>
<td>General Virology</td>
<td></td>
</tr>
<tr>
<td>or PMI 128</td>
<td>Biology of Animal Viruses</td>
<td></td>
</tr>
<tr>
<td>PLP 120</td>
<td>Introduction to Plant Pathology</td>
<td></td>
</tr>
<tr>
<td>PMI 127</td>
<td>Medical Bacteria &amp; Fungi</td>
<td></td>
</tr>
</tbody>
</table>

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.

Guide to GDB Restricted Electives (https://gdb.ucdavis.edu/important-documents/)

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 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/).

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**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**

<table>
<thead>
<tr>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
</table>

**First Year**

**Fall**

This is a SAMPLE schedule—see advisor to confirm your own plan.

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>SAS 013</td>
<td>Disease &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td>CHE 002A</td>
<td>General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>MAT 017A</td>
<td>Calculus for Biology &amp; Medicine</td>
<td>4</td>
</tr>
<tr>
<td>SAS 006A</td>
<td>Introduction to Career Discovery Groups</td>
<td>1</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
</table>

**Third Year**

**Fall**

This is a SAMPLE schedule—see advisor to confirm your own plan.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 013</td>
<td>Disease &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td>GDB 090</td>
<td>Introduction to Global Disease Biology</td>
<td>1</td>
</tr>
<tr>
<td>BIS 101</td>
<td>Genes &amp; Gene Expression</td>
<td>4</td>
</tr>
<tr>
<td>SAS 106</td>
<td>Career Discovery Groups for Transfer Students (Optional program for career exploration.)</td>
<td>1</td>
</tr>
</tbody>
</table>

Units 13

Total Units 13

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.