GLOBAL DISEASE BIOLOGY, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

Program Office

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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)

Code	Title	Units
Preparatory Subject Matter		
Global Disease Biology		
GDB 090	Introduction to Global Disease Biology	1
Science & Society		
SAS 013	Disease & Society	3
Biological Sciences		
BIS 002A	Introduction to Biology: Essentials of Life on Earth	5
BIS 002B	Introduction to Biology: Principles of Ecology & Evolution	5
BIS 002C	Introduction to Biology: Biodiversity & the Tree of Life	5
Chemistry		
CHE 002A	General Chemistry	5
CHE 002B	General Chemistry	5
CHE 002C	General Chemistry	5
AND		
Choose a series:		6-8
CHE 008A & CHE 008B	Organic Chemistry: Brief Course and Organic Chemistry: Brief Course	
CHE 118A & CHE 118B	Organic Chemistry for Health & Life Sciences and Organic Chemistry for Health & Life Sciences	
Physics		
PHY 007A	General Physics	4
PHY 007B	General Physics	4
Calculus		
MAT 017A	Calculus for Biology & Medicine	4
MAT 017B	Calculus for Biology & Medicine	4
MAT 017C	Calculus for Biology & Medicine	4
Statistics; choose one:		*4*

STA 013	Elementary Statistics	
or STA 013Y	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]	3
GDB 189	Global Disease Biology Senior Research [2]	3
GDB 189D	Global Disease Biology Research Discussion [3]	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.		25
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/).

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		
This is a SAMPLE schedule—see advisor to confirm your own plan.		
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		
This is a SAMPLE schedule—see advisor to confirm your own plan.		
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 [1]		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.