



Global Disease Biology (GDB) is a program that allows students to study disease and its relationship to the health of people, animals, plants, and the environment in a global context. The program uses an interdisciplinary approach to advance understanding of diseases, societal and personal impacts, and the science behind discoveries, causes, evolution, diagnosis, treatment and prevention of diseases. Students interested in the health sciences will integrate concepts from multiple disciplines to learn how to solve global disease and health challenges using innovative approaches.

**GLOBAL DISEASE BIOLOGY MINOR REQUIREMENTS (20-22 units):**

Course	Title	Prerequisites	Units	Quarters Offered	Completed
<b>Global Disease Biology core: (17 UNITS)</b>					
SAS 13	Disease and Society	--	3	F, W	_____
PMI 129Y	One Health: Human, Animal & Environment	Good academic standing	3	F, W	_____
VME 158	Infectious Disease in Ecology and Conservation	BIS 2A-C; EVE 100 recommended	3	W, S	_____
GDB 101*	Epidemiology	BIS 2A-C; SAS 13; STA 13/100 or PLS 120	4	F, W	_____
GDB 102*	Disease Intervention and Policy	BIS 2A-C; SAS 13; PMI 129Y; VME 158; GDB 101	4	S	_____
<b>Pathogen/Disease - Choose <u>one</u>: (3-4 units)</b>					
ENT 153	Medical Entomology	BIS 2A-B	3	W	_____
ENT 156	Biology of Parasitism	BIS 2A	3	S	_____
GDB 103	Microbiome of People, Animals, & Plants	BIS 2A-C	3	W, S	_____
MMG 162	General Virology	BBIS 101 with C- or better; BIS 102 or 105 recommended	3	W	_____
<b>or</b>					
PMI 128	Biology of Animal Viruses	BIS 102	3	S	_____
<b>or</b>					
MMI 177	Human Virology	BIS 101 or BIS 102 or BIS 103 or BIS 104 or BIS 105	3	W	_____
PLP 100	Biology of Plant Pathogens	BIS 2A-C	3	W	_____
PLP 120	Introduction to Plant Pathology	BIS 2C; MIC 102 recommended	4	S	_____
PLP 130	Fungal Biology and Disease	BIS 2A-C	3	S	_____
PLP/PLB 148	Introductory Mycology	BIS 2A-C	4	F	_____
PMI 127	Medical Bacteria and Fungi	Any MIC course with lab, Immunology recommended	3	S	_____

**\*\*\*IMPORTANT\*\*\***

If you plan to declare the GDB minor, you must meet with GDB Advising to set up an academic plan **before your last year**. If it is your last year at UC Davis, and you haven't met with a GDB advisor, you may not be able to declare the GDB minor. \*GDB 101 and GDB 102 enrollment is restricted to **GDB MAJORS** during Pass One. **GDB MINORS must wait for their Pass Two registration appointment to register or waitlist for GDB 101 and 102.**

## **Global Disease Biology Core:**

### **SAS 13. Disease and Society (3)**

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Lecture—3 hour(s). Limited enrollment. Introduction to the concept 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.

### **PMI 129Y. One Health Fundamentals (3)**

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Lecture/Discussion—3 hour(s); Web Electronic Discussion. Introduction to fundamentals, challenges, and opportunities in One Health using local and global health case studies. Animal, human, and environmental health problems, along with tools and transdisciplinary approaches, will be introduced to foster innovative thinking that addresses complex issues.

### **VME 158. Infectious Disease in Ecology and Conservation (3)**

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Lecture—3 hour(s). Introduction to the dynamics and control of infectious disease in wildlife, including zoonotic diseases and those threatening endangered species. Basic epidemiological models and application to field data. Scientists' role in developing disease control policies.

### **GDB 101. Epidemiology (4)**

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Lecture—2 hour(s); Laboratory—3 hour(s); Discussion—1 hour(s). Principles and practice of epidemiology as applied to human, animal, and plant populations and the environment in which these populations co-exist. Quantitative analysis of both infectious and non-infectious disease. Inter-dependence between epidemiological analysis, decision-making and policy formulation will be highlighted.

### **GDB 102. Disease Intervention and Policy (4)**

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Lecture—3 hour(s); Discussion—1 hour(s); Project (Term Project). Examination of the prevention and treatment of diseases affecting humans, animals, and plants. Case studies illustrate the merits of a unified approach to promoting health at local, regional, and global scales.

## **Pathogen/Disease Courses (choose one):**

### **ENT 153. Medical Entomology (3)**

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Lecture—3 hour(s). Basic biology and classification of medically important arthropods with special emphasis on the ecology of arthropod-borne diseases and principles of their control. Relationships of arthropods to human health.

### **ENT 156. Biology of Parasitism (3)**

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Lecture/Discussion—3 hour(s). Lectures on the biological and ecological aspects affecting host-parasite relationships using selected examples from protozoan and metazoan fauna.

### **GDB 103. The Microbiome of People, Animals, and Plants (3)**

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Lecture—3 hour(s). Examination of the structure and function of microbial communities that live inside and on host organisms. Introduction to general concepts of the microbiome and microbiota, and their relationship to host health and disease.

### **MMG 162. General Virology (3)**

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Lecture—3 hour(s). Integrated presentation of the nature of animal, bacterial, and plant viruses, including their structure, replication and genetics. Only 2 units of credit for students who have taken PMI 128 or MMI 177 or MMI 177; no credit if student has taken MIC 162.

### **PMI 128. Biology of Animal Viruses (3)**

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Lecture—3 hour(s). Fundamental physical and chemical properties of animal viruses; methods of propagation, purification and assay. Mechanisms of viral replication and pathogenesis of viral infections in man and animals. Immunity to virus diseases and oncogenic properties of animal viruses. Two (2) units of credit given if completed MMG 162 or MMG 162.

### **MMI 177. Human Virology (3)**

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Lecture—3 hour(s). Covers viruses that cause diseases in humans, the structure and classification of medically-important viruses, methods of transmission and replication strategies. Viruses that are important human pathogens and epidemiology, immune response, detection, diagnosis and treatment of human viral infections. Discussion of clinical cases, cellular pathology, cancer and emerging and reemerging human viral diseases including Coronaviruses, vaccines, antivirals, and use of viruses in medicine and animals. Immunity to virus diseases and oncogenic properties of animal viruses. Two units of credit given if completed MIC 162.

### **PLP 100. Biology of Plant Pathogens (3)**

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Lecture—3 hour(s). Behavior, pathology, ecology, and evolution of plant pathogens with global impact on food security and environmental health. Bacteria, fungi, viruses, and other pathogens that infect plants.

### **PLP 120. Introduction to Plant Pathology (4)**

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Lecture—2 hour(s); Laboratory—6 hour(s). The nature, cause, and control of plant diseases.

### **PLP 130. Fungal Biology and Disease (3)**

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Lecture—3 hour(s). Course devoted to physiology, cell biology and biochemistry of fungi, pathobiology of the diseases that fungi or their metabolites cause on plants, animals and humans, and the control of fungal pathogens using fungicides. Intended for students with an interest in plant pathology, medical microbiology, veterinary medicine, or environmental microbiology.

### **PLP/PLB 148. Introductory Mycology (4)**

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Lecture—2 hour(s); Laboratory—6 hour(s). Systematics, ecology, evolution, and morphology of fungi. Importance of fungi to humans. Limited enrollment.

### **PMI 127. Medical Bacteria and Fungi (3)**

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Lecture—3 hour(s). Pass One restricted to Microbiology majors. Introduction to the bacterial and mycotic pathogens of man and animals, with emphasis on pathogenic mechanisms and ecological aspects of infectious disease.