CHARLES BEVINS, CHAIR
Designated Emphasis in Host Microbe Interactions

RE: Designated Emphasis in Host Microbe Interactions Degree Requirements

Enclosed is a copy of the Designated Emphasis in Host Microbe Interactions degree requirements as approved by Graduate Council on June 12, 2020. These degree requirements are now the official requirements for the Designated Emphasis in Host Microbe Interactions and will be posted on the Office of Graduate Studies program webpage:

https://grad.ucdavis.edu/programs/designated-emphases/gdhm

Thank you for your efforts on behalf of graduate education.

Sincerely,

Carlee Arnett, Chair
Graduate Council

CC: Jasmine Bonite, Project/Policy Analyst, Graduate Studies
    Felicia Murdoch, Policy Analyst
A. Admissions Criteria

Admission will be open to graduate students in affiliated programs in good standing. The primary criteria for admission will be a commitment to pursue a dissertation topic that is interdisciplinary in nature and aims to develop a mechanistic understanding of the dynamic interactions of microbes and their host. Required courses must be taken prior to the PhD qualifying exam, and students must have a DE representative on the QE committee. Interested students should thus apply to the DE as soon as possible after being admitted to their PhD program so they can complete the DE-HMI requirements in the appropriate time frame.

B. Curriculum

1. Required courses:

   a) MMI 200D: Mechanisms for Microbial Interactions with Hosts (Winter, 3 credits, existing course)

      Study of mechanisms involved in microbial interactions within a host environment. The following principles are basic to understanding these interactions: host and microbe recognition, invasion, competition and growth, and host response (defense or symbiosis).

   b) Choose at least one of the following two courses:

      IMM 201 Basic Immunology (Fall, 4 credits, existing course)

      This course is a comprehensive introduction to basic principles of immunology. Course content includes lectures based on immunology textbooks, in addition to discussion of concepts and current literature pertinent to lecture topics. Letter grading is based on discussion participation, one midterm and a comprehensive final exam.

      PLP 210 Biochemistry and Molecular Biology of Plant–Microbe Interaction (Winter, 4 credits, existing course)

      Discussion of plant–microbe interactions, focused on the underlying cellular, biochemical, and molecular events that determine the diseased state.
2. Elective courses:

Students will complete three additional elective courses (6-10 units total) and two seminars, which may also serve to fulfill course requirements of the affiliated PhD program. All electives listed are pre-existing courses. Courses should be selected to complement the integrative nature of the student’s dissertation research and must include at least one course from each of the two topics (Host Response and Microbiology) listed below. Students will be allowed to either select courses or seminars from the list provided, or petition to use other courses as electives subject to approval by the DE-HMI Executive Committee.

(Note that the time to complete the affiliated PhD program will not be affected because, electives may also meet the students’ PhD program requirements.)

ELECTIVE COURSE TOPICS:

A total of three is required

A. Host Response to Microbes

IMM 204 Topics in Innate Immunity
IMM 293 Advanced Concepts in Immunology
IMM 297 Mucosal Immunology
PMI 202 Integrated Pathobiology Core 2
PLP 201A Impacts, Mechanisms and Control of Plant Disease

B. Microbiology

MIB 200A Microbial phylogeny, structure, and metabolic diversity
MIC 262 Advanced General & Molecular Virology
MMI 215 Medical Parasitology
MMI 280 Molecular Pathology
EVE 298 Microbial Phylogenomics
PLP 224 Advanced Mycology
PLP 228 Plant Bacteriology
PLP 230 Plant Virology

SEMINAR TOPICS:

A total of two is required.

MIC 292 Bacterial Effector Proteins
MMI 298 Current Topics in Host-Microbe Interactions
MMI 291 Seminar Series, Emerging Challenges in Microbiology and Immunology
CDB 298 Eukaryotic Cell Signaling Systems
PMI 290 Center for Immunology & Infectious Disease Weekly Seminar Series  
PLP 290 Plant Pathology Seminar Series  
PLP 291 Seminar in Molecular Plant Pathology

3. HMI Biweekly Work-in-Progress Meetings

Students in the DE-HMI are expected to participate regularly in one or both of two Work-In-Progress meetings (described below) and to present their own research to one of these groups at least once during their graduate studies. The expectation for regular attendance will be considered 50 meetings, which is roughly 40% of meetings over a five-year period (or approximately 90% of meetings over a two-year period, i.e. prior to typical scheduling of the QE exam). Work-in-Progress meetings:

(i) The ongoing biweekly Host-Microbe and Pathogenesis Work-In-Progress Meetings, which was established in 2005, is coordinated by Dr. Bevins (Chair of the DE-HMI), and regularly meets on Thursday’s at 12:00 noon. Many DE-HMI faculty, including Drs. Baumgarth, Bäumler, Bevins, Coffey, McSorley, Simon, Solnick, Tsolis, and Zhou and members of their laboratories, regularly attend this meeting. (ii) The other work-in-progress meeting is one organized by Dr. Dinesh Kumar and focuses on plant-microbe interactions.

4. Regional Symposia, Retreats, National and Local Meetings

Faculty and students at UC Davis are fortunate to be in close proximity to several outstanding local meetings regularly scheduled that focus on topics relevant to host-microbe interaction. Students are expected to attend, on average, one of these conferences annually throughout their graduate training. Students may substitute attendance at a national or international meeting for attendance at the local venues listed here. Examples of local HMI-related meetings include:  UCD HMI Annual Retreat at Lake Tahoe, the annual Bay Area Microbial Pathogenesis Symposium (BAMPS), the Annual Bay Area Symposium on Viruses, the Annual Microbiology Student Symposium at UC Berkeley, the annual Infection & Host Response: From Basic Science to Global Health Symposium, and the Mid-Winter Conference for Immunologists at Asilomar.

5. Qualifying Examination

In consultation with the student, the appropriate affiliated PhD program, and the DE Executive Committee, one DE-HMI faculty member will be assigned to the Qualifying Examination Committee to examine the student on their level of knowledge within the area of the DE. The Chair of the DE and the student’s Ph.D. program Graduate Adviser must co-sign the Qualifying Examination Committee form, which is submitted to Graduate Studies for approval by the Dean of Graduate Studies. Satisfactory performance on the QE for the PhD will be judged independently from performance on the DE. Thus, an allowable outcome of the QE is that the student’s
performance may be “passing” for the PhD but “not passing” for the DE. In the event that a student passes the PhD portion of the QE, but receives a “not pass” for the DE, the DE Executive Committee will define a plan for remediation. The plan may include, but not be limited to, reexamination by the DE Executive Committee, coursework, teaching, or preparation of a paper. If the student is reexamined, the outcome is limited to “pass” or “fail”. If the student receives a “fail”, the Executive Committee disqualifies the student from the DE.

6. Dissertation Requirements

The student’s Dissertation Committee shall be selected in accordance with the regulations of the Ph.D. program, but must include at least one member of the DE. The DE member may be the Dissertation Committee Chair (i.e. Major Professor). The dissertation topic will be relevant to the area of the DE.

7. Degree Conferral Process:

The DE will be awarded solely in conjunction with the PhD and will be signified by the degree designation PhD in ‘X’ with Emphasis in Host-Microbe Interaction, where ‘X’ is one of the affiliated graduate programs.

C. Student Advising

The DE Chair will serve as an advisor for the DE students. In this role, the DE Chair will review the academic progress towards DE requirements for each student on an annual basis. Working with the DE Chair, each student will be required to develop an annual work plan to direct progress towards the completion of the DE requirements. This work plan will be evaluated and revised annually to ensure that the student is making adequate progress towards DE completion. The DE Chair will confirm to Graduate Studies and the student’s PhD program that the student has fulfilled all the DE requirements prior to graduation by signing the DE Final Verification Report Form.

D. Impact on Time to Degree

Because the DE requires completion of graduate courses that are often taken as part of the affiliated PhD programs, it is estimated that the impact of completing the DE in Host Microbe Interaction on the student’s time to degree will be minimal.