Department of Ecology and Evolution
Graduate Student Handbook
2018-2019
### Department Staff

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### Office of Graduate Affairs

**Biological Sciences Division (BSD)**

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Fax Machine for student use is located in:

Zoology 114 (Office hours only) 702-9740
FACULTY

JOY BERGELSON, Ph.D., James D. Watson Professor and Chair, Department of Ecology & Evolution, and in the Committees on Evolutionary Biology; Genetics, Genomics & Systems Biology; Microbiology; and Senior Fellow, Institute for Genome & Systems Biology.*

STEFANO ALLESINA, Ph.D., Professor, Department of Ecology & Evolution, Senior Fellow, Computation Institute

LUI S BETENCOURT, Ph.D., Professor, Department of Ecology & Evolution and Pritzker Director of the Mansueto Institute for Urban Innovation

SARAH COBEY, Ph.D., Associate Professor, Department of Ecology & Evolution

GREG DWYER, Ph.D., Professor, Department of Ecology & Evolution and in the Committee on Evolutionary Biology.*

MARTIN KREITMAN, Ph.D., Professor, Department of Ecology & Evolution and in the Committee on Genetics, Genomics & Systems Biology.*

MARCUS KRONFORST, Ph.D., Assistant Professor, Department of Ecology & Evolution

MANYUAN LONG, Ph.D., Edna Papazian Distinguished Service Professor, Department of Ecology & Evolution, and in the Committees on Evolutionary Biology and Genetics, Genomics & Systems Biology.*

MICHAEL LUDWIG, Ph.D., Research Associate (Associate Professor), Department of Ecology & Evolution.

CATHERINE PFISTER, Ph.D., Professor, Department of Ecology & Evolution and in the Committee on Evolutionary Biology.*

TREVOR PRICE, Ph.D., Professor, Department of Ecology & Evolution and in the Committees on Evolutionary Biology and Genetics, Genomics & Systems Biology.*

STEPHEN PRUETT-JONES, Ph.D., Associate Professor, Department of Ecology & Evolution and in the Committee on Evolutionary Biology.*

JOHN REINITZ, Ph.D., Professor, Department of Statistics, Department of Ecology & Evolution; Department of Molecular Genetics & Cell Biology; the College; and Member, Institute of Genomics & Systems Biology

MATTTHIAS STEINRUECKEN, Ph.D., Assistant Professor, Department of Ecology & Evolution *

J. TIMOTHY WOOTTON, Ph.D., Professor, Department of Ecology & Evolution and in the Committee on Evolutionary Biology.*

CHUNG-I WU, Ph.D., Professor, Department of Ecology & Evolution and in the Committees on Evolutionary Biology and Genetics, Genomics & Systems Biology*.

JERRY COYNE, Ph.D., Professor Emeritus, Department of Ecology & Evolution, and in the Committees on Evolutionary Biology and Genetics, Genomics & Systems Biology.*

RICHARD HUDSON, Ph.D., Professor Emeritus, Department of Ecology & Evolution, and in the Committees on Evolutionary Biology; Committee on Genetics, Genomics & Systems Biology *

WEN-HSIU NG LI, Ph.D., Professor Emeritus, Department of Ecology & Evolution

THOMAS NAGYLAKI, Ph.D., Professor Emeritus, Department of Ecology & Evolution

MANFRED RUDDAT, Ph.D., Associate Professor Emeritus, Department of Ecology & Evolution and Associate Dean of Students in the College.*

*Faculty member, Biological Sciences Collegiate Division.
THE DEPARTMENT OF ECOLOGY & EVOLUTION

The Department of Ecology & Evolution provides training for research and teaching in the ecology, evolution and behavior of whole organisms, primarily at the level of the organism, the population, and the ecosystem. The research interests of our faculty include molecular evolution, population genetics, quantitative genetics, animal behavior, plant and animal ecology, evolutionary theory, and related subjects. Individual levels of study range from molecules to communities. A common theme is the conduct of studies in a rigorous quantitative and conceptual context, and all faculty share an interest in the architecture of populations, species, and communities.

The Department stresses scientific breadth and the interrelations between various specialized fields. Students are encouraged to approach basic biological problems with the most appropriate techniques: computational, mathematical, observational, field, bench, or genomic. Departmental laboratories are equipped for a wide variety of contemporary research methods. Courses given in other departments may be taken for credit in Ecology & Evolution, for example, in the Departments of Organismal Biology and Anatomy, Biochemistry and Molecular Biology, Molecular Genetics and Cell Biology, Statistics, Geophysical Sciences, Anthropology, and Chemistry. Many students in the Department of Ecology & Evolution participate in interdepartmental programs in genetics, cell biology, developmental biology, population biology, and evolutionary biology, and in these programs dissertation research may be co-sponsored by faculty from different departments.

The Department manages the University of Chicago’s Greenhouse located in the Biological Sciences Learning Center as well as the Warren Woods Ecological Field Station in Three Oaks, MI. Collaboration is also maintained with the Field Museum and the Shedd Aquarium for students interested in research in systematics, taxonomy, and evolutionary biology, the Brookfield Zoo for basic research in conservation and behavior involving zoo animals, Argonne National Laboratory for terrestrial systems and microbial genomics research, and the Woods Hole Marine Biological Laboratory. Possibilities also exist for field studies around the world.

The Department has a regular weekly seminar series, with invited speakers from around the country. There are also a number of more informal seminars each week, and graduate students have a weekly Friday afternoon meeting of their own. Graduate students, especially in their first year are expected to attend all departmental seminars as their schedule allows.

There are many opportunities for teaching experience in undergraduate and graduate courses, and this is regarded as a required part of the graduate training program, not merely a source of financial gain.
STUDENT GUIDELINES

General Timetable for the Ph.D. Program in Ecology & Evolution

Most students in the Department of Ecology & Evolution complete their Ph.D. program in less than six years, though students entering with Masters degrees may finish earlier. All students in the BSD are guaranteed funding support for five years as long as they are in good academic standing.

The first and second years consist largely of coursework and individual reading courses, aiming toward successful completion of the general knowledge examination by the Spring quarter of the first year of study and defense of a dissertation research proposal by the end of the second year of study. Work in subsequent years shifts to dissertation-centered research and, finally, preparation and defense of the Ph.D. dissertation. While there is no M.S. program in Ecology & Evolution, students may elect to receive the M.S. degree upon successful completion of their dissertation proposal defense.

General Departmental Information

The Department of Ecology & Evolution is currently housed in the following University Buildings: Zoology and Erman. The Department office is located in Zoology 114. The Office of Graduate and Postdoctoral Affairs for the Division of the Biological Sciences is located in Room 104 of the Biological Sciences Learning Center (BSLC) (924 E. 57th Street). The University Registrar is located on the first floor of the Administration Building. The Office of the Bursar is located in the Edlestone building at 6030 S. Ellis Avenue. The Chicago Card and Dissertation Offices are located in Regenstein Library.

Most administrative matters concerning graduate study are coordinated through the Graduate Program Administrator (Audrey Aronowsky, located in Culver 405C). This person coordinates registration, student progress reports, fellowships, programming and most other graduate student concerns. In addition, information on courses, summer programs, outreach opportunities, etc., is distributed through this office.

All Department students have office space (shared with other graduate students) in one of the Department's buildings. Incoming graduate students are assigned office space as soon as possible after arrival on campus. Once in a lab, the advisor will provide office and/or lab space.

Department students are allocated funds in an expense account administered by the Department office in Zoology 114 (for a maximum 5 years). Allocated funds are available by submitting a brief email application to the Department Chair and Director of Graduate Studies. This account may be used for photocopying, postage, supplies, telephone accounts, conference travel, computing equipment, books, etc. Unused expense account funds are carried over into the next academic year, but all funds must be spent before a student
If expense account funds are used to purchase a computer or other hardware, that item must remain at the University as University property after the student graduates.

Almost all department communication is handled by email. Set up your account as quickly as possible after arrival, and give your email address to the E&E office right away (This usually has been done for you before you arrive, but confirm this!).

Keys for student offices, computer rooms, etc., are available from Linda Naunapper in the E&E Main Office. A refundable deposit of $20 is required for each key. Any requests for keys to faculty laboratory space must be accompanied by a signed note from the faculty member.

Registration

The University of Chicago is organized on a quarter system, and most graduate students in the Division of Biological Sciences are registered for full-time study and/or research all four quarters (i.e., 12 months each year). Although specific procedures change from quarter to quarter and year to year, most graduate students will be expected to communicate with the Graduate Program Administrator and the BSD Graduate Affairs Office four times every year, whether they are taking classes or conducting field work away from campus. Regardless of whether a student is taking courses, they must be registered for 300 units each quarter.

Registration is now online through your my.uchicago.edu account. Each quarter, students will be notified of the dates for online registration. There is an internal deadline so that the GPA can verify student registration before the University deadline.

- Students in the first two years of study will meet quarterly with the Student Advisory Committee to obtain approval for their proposed registration. However, students can register online before their meeting with the Advisory Committee, then drop or add courses online in the first 3 weeks of the quarter.
- Students who have advanced to candidacy for the Ph.D. can enter their registration requests online (see below)

Time Schedules listing each quarter’s courses generally are available online on the Registrar’s web site (registrar.uchicago.edu) where you can also find information on university deadlines, tuition and fee schedules.

NOTES:

Our Subject Codes:
ORGB – Department of Organismal Biology and Anatomy
ECEV – Department of Ecology and Evolution
EVOL – Committee on Evolutionary Biology

Courses with variable units, and sections for each instructor:
49500 – teaching (not for BSD teaching requirement)
49700 – reading
49800 – research, off campus (use also w/ pro forma registration)
49900 – research, on campus
Regular graduate courses – Most graduate courses carry 100 units and the section number is 01.

Change of Registration
The Drop-Add period (in which to change your registration free of charge) is the first 3 weeks of each quarter. If you make changes to your schedule, please email the Graduate Program Administrator so the changes can be recorded in the system.

Degree application and graduating
If you want to receive a degree (Ph.D. or M.S.), you must apply for the degree online (through my.uchicago.edu) no later than the first week of the quarter in which you plan to receive the degree. If you don’t apply for a degree, you can’t receive the degree. Really. If something happens and you can’t finish the degree requirements in that quarter, notify the Graduate Program Administrator as soon as possible so that you can be removed from the graduation list. You will need to submit a new application for a degree for the new quarter in which you plan to receive a degree.

If you’re not going to be in residence at U Chicago
If you will be away or off campus, please notify the Graduate Program Administrator and the Department office in advance. We need to make sure that you’re in the right registration category. Usually students who are not on campus at all, or more than 100 miles from campus for the quarter, are registered in a category called Pro Forma. This category has some restrictions, but the tuition is greatly reduced, since you won’t be using University resources during the quarter. Please also register at traveler.uchicago.edu so we, and the University, can keep track of you should an emergency arise.

Late Fees, payment deadlines, restrictions
It is each student’s responsibility to pay close attention to the published schedules of late fees and restrictions found on line at http://registrar.uchicago.edu. Any unpaid fee (library fines, activity fees, etc.) can cause a student’s account to be restricted by the Office of the Bursar. Once a student is restricted, ID cards will not allow entry into University buildings, all privileges are lost at the library, and the student account will start to accrue late fees. Late fees are almost never removed, unless they were assessed because of a University administrative error. Schedules for fee and registration deadlines, along with late fee penalties, are published in each quarterly time schedule.

Other important things

Tuition, Stipends and Fees
All Ph.D. students in the Division of the Biological Sciences receive the same basic stipend and health fee/insurance support (2018-19: $31,736 stipend, plus basic health insurance, student health fee). Each prospective student received a written financial aid offer as part of their admission reply form. If a student received a bill that seems to contradict that award, the student should immediately bring the bill to the attention of the Graduate Program Administrator.

Stipends are typically distributed online by the Bursar’s Office just prior to the start of a quarter. If you are expecting a paper check, you can retrieve it in the Office of Graduate Affairs in BSLC 104 on the first day of a quarter. Students receiving their support from Divisional Unendowed funds and certain Departmental endowments or training grants in and after their 4th year should expect to serve as a Lab TA one quarter without remuneration as part of their stipend. Please contact the Graduate Program Administrator for more information.
Taxes
The stipend/fellowship you receive is considered taxable income. You are responsible for understanding or seeking help in understanding the IRS requirements. UChicago and the Office of International Affairs host workshops annually for domestic and international students, respectively. Find out more at the Graduate Education website: http://grad.uchicago.edu/fellowships_funding/tax_information/

Division of Biological Sciences Teaching Requirement
All graduate students in the Division of Biological Sciences must successfully complete a Divisional teaching requirement as part of their Ph.D. program. Guidelines and information on this program are issued by the Graduate Affairs Office, Division of Biological Sciences, every Autumn quarter. Please consult the BSD Graduate Affairs Office (BSLC 104), the TA Handbook and the OGPA website (http://gradprograms.bsd.uchicago.edu/current_students/teaching_opportunities.html) for more information.

Evaluation of good standing
In the first two years, student progress is evaluated by the Student Advisory Committee. In later years, the advisor and dissertation committee meet with the student once or twice per year depending on year in the program. All students and their progress will be discussed at an annual faculty meeting. In the event that a student is not performing adequately or not making sufficient progress (via course grades, rotation grades, preliminary exams, committee meetings [or lack thereof]), the student will be informed in writing of deficiencies, suggestions on how to remedy them, and a time line for getting back on track. A student may be dismissed from the program if deficiencies are not remedied to the satisfaction of the departmental Chair and Director of Graduate Studies.

Staying healthy
Myriad options are available at the University for students to stay physically, emotionally, and mentally healthy. Some online resources are listed below. When in doubt, make an appointment with the Graduate Program Administrator to discuss available resources.

Physical Education and Athletics
http://athletics.uchicago.edu/im_clubs/index
http://athletics.uchicago.edu/facilities/ratner/index
http://athletics.uchicago.edu/facilities/hcfh/index
http://athletics.uchicago.edu/facilities/fitchicago
http://yoga.uchicago.edu/

Physical and Mental Health
http://studenthealth.uchicago.edu/
https://wellness.uchicago.edu/
http://counseling.uchicago.edu/page/our-services
http://counseling.uchicago.edu/page/virtual-pamphlet-collection
http://counseling.uchicago.edu/page/academic-skills-assessment-program
http://counseling.uchicago.edu/page/groups
http://grad.uchicago.edu/take_care_of_yourself/graduate_mental_health_resources/
First Year - Incoming Students

Newly admitted students should receive information from the Graduate and Postdoctoral Affairs Office, Division of the Biological Sciences, during the summer. Included in this packet will be information regarding Autumn quarter orientation and registration dates, housing, etc. Incoming students should contact the Graduate Program Administrator and the Department as soon as possible after arrival in Chicago. Incoming international students must also check in with the Office of International Affairs shortly after arriving.

Student Advisory Committee
All incoming students shall be scheduled for an initial discussion with the Student Advisory Committee during Orientation Week. The purpose of this meeting will be to gain an understanding of the student’s background and former training, to discuss the student's general and specific research interests, to introduce the student to the program in Ecology & Evolution, and to formulate an academic plan for the student's first year in residence. The Advisory Committee must approve each student’s choice of courses until the student passes the dissertation proposal defense her/his second year. E&E graduate students must all meet our distribution requirement that consists of three courses in Ecology and Evolution, either one course in Ecology and two in Evolution, or one course in Evolution and two in Ecology.

If a student has post-B.S. experience, the Advisory Committee will recommend that the student proceed on an accelerated schedule through the early phase of her/his program. This will continue the individualized program of Ecology & Evolution while recognizing that more advanced students are expected to fulfill the general knowledge and proposal defense segments of candidacy more rapidly than students entering from college or switching fields.

The Student Advisory Committee will continue to meet with students individually prior to registration for the Winter and Spring quarters to discuss their work to date and arrive at a specific course of study for each quarter. During the pre-Winter quarter meeting (generally in November), the Advisory Committee and the student will propose an Examination Committee for the student's general knowledge examination, which will be held no later than the 10th week of the Spring quarter. This committee will be arranged by the Student Advisory Committee members, and generally will represent the three areas in which the student has completed course work during the first year. In most cases, one member of the committee will be from the Student Advisory Committee, and that member will serve as chair of the examining committee.

The General Knowledge Examination
Each incoming student will be expected to pass an oral General Knowledge Examination (preliminary exam) administered during the first year of study, generally no later than the 10th week of the Spring quarter. The examination session will be attended by all three members of an examination committee constructed by the process outlined above. The goal of this examination will be to access each student's general knowledge of key concepts, processes and issues in ecology and evolutionary biology as covered in the courses completed during the first year.

Each member of the Examination Committee will submit sample written questions based upon materials in the areas covered in the coursework recommended to the student by the Student Advisory Committee. A copy of the sample questions will be distributed to the student to be examined at least one week before the examination, and shall be used to initiate the examination. During the exam, the student should be prepared to explain models, equations, terminology, fundamental processes, references, and theory as relevant to the
questions. The written questions are a starting point, and the student should expect that s/he will be interrupted, led along tangents, and continue to be questioned until examiners hit upon one where the answer is unknown. Three hours shall be allowed for the oral examination, after which the committee will discuss the performance of the student. The faculty committee may make suggestions regarding further coursework, pre-proposal research, and plans for preparation of the dissertation proposal.

If a student receives a "conditional pass" or "fail" on the oral examination, the student may request a subsequent written examination, subject to the approval of the Chair of the Department. All such examinations will be held no later than the final week of the Spring quarter.

It will be the responsibility of the General Examination Committee to report, in writing, the results of the General Examination to the Chair of the Department, the Graduate Program Administrator and the examined student in a timely fashion. Possible results of the examination are:

1. **Pass.** The student is certified as having passed the general examination. The student can apply to become a candidate for the M.S. degree in Ecology & Evolution, and can continue in the Ph.D. program. Forms for application to candidacy for the M.S. degree are available from the Graduate Program Administrator. Students may apply for the M.S. after they successfully complete the defense of their Ph.D. Dissertation Proposal (usually Spring of the second year, see below).

2. **Conditional Pass.** The student is certified as having passed the general examination, contingent upon further specified coursework/individual reading with specific faculty in certain areas, according to a timetable for successful completion elaborated by the general knowledge examination committee. When the student has fulfilled the additional requirements, as determined by the Student Advisory Committee and the Chair of the Department, the student shall be recommended for candidacy for the M.S. degree in Ecology & Evolution. Under no circumstances shall a student be permitted more than three additional quarters after the Examination to fulfill the requirements of the Conditional Pass.

3. **Fail.** The student has not passed the General Examination. This decision must be explained in writing by the Examination Committee. The student may re-take the General Examination during the Summer quarter. Continued financial aid for the Autumn quarter will be contingent upon successful performance in the examination. No student shall be considered in good standing who has not successfully passed the General Knowledge Examination before the start of the Autumn quarter of the second year in residence.

**Off-quarter matriculation**
In the rare case of students matriculating in quarters other than the Autumn quarter, the Student Advisory Committee shall meet with the incoming student one week before the registration period for the first quarter of residency in the Ph.D. program. This meeting will have the same requirements as the Autumn quarter advisory meeting with the additional requirement that the Advisory Committee shall recommend, in writing, an individualized schedule for the completion of the General Knowledge Exam.

**Research opportunities**
Students should consult with the Student Advisory Committee, the Chair, the Director of Graduate Studies, the Graduate Program Administrator, and other graduate students about pre-dissertation research opportunities and potential funding sources. Rotations are not required, but are valuable, especially in the bench and computational sciences, for obtaining specific skills and getting to know a variety of lab
management styles. Rotation forms should be filled out with the advisor and submitted to the Graduate Program Administrator.

Department members have associations with numerous field stations and sites in the United States and around the world. Students are encouraged to participate in coursework, discussion groups and seminar series in related departments at the University and affiliated institutions such as the Field Museum, Brookfield Zoo, Argonne National Lab, Woods Hole Marine Biological Lab, and other local universities.

Valuable pre-dissertation research can be accomplished during the Summer quarter between the first and second year of study. Students should begin investigating these potential research opportunities early in their first year of graduate study.

Funding for graduate research can be from large or small sources. All qualified students are expected to apply for an NSF pre-doctoral fellowship early in the Autumn quarter of their first or second years, depending on their eligibility. The Darwinian Cluster runs a joint course to help first-year students prepare and submit these grant applications (ECEV 40100, Grants, Publications, Professional Issues). Smaller funding sources, such as the Hinds Endowment (administered by the Committee on Evolutionary Biology) can often be used to support pre-dissertation research. Information about these funds and information and forms for submitting proposals are available online at http://evbio.uchicago.edu/resources/studentresearchfunds.pdf, or from the CEB Administrator in Culver 402.

Other requirements
In addition to the distribution requirements, students are expected to attend the Monday departmental seminars each time they are offered, participate in the reading group related to their interests, and enroll in ECEV 40100 (Grants/Pubs/Professional Issues) if appropriate. All BSD students are required to enroll in BSDG 55100 (Rigorous and Responsible Research) when it is offered in their first year (either Winter or Spring quarters). Students in the field sciences should be sure to communicate with the Office of Graduate Affairs if their field season will conflict with this course.

Second Year

The general goals of the second year of residence in Ecology & Evolution involve the acquisition of requisite knowledge and skills for the preparation for the Ph.D. proposal, preliminary research necessary for the proposal, and beginning participation in the diverse seminar and laboratory discussion groups active in the fields of Ecology & Evolution.

Students continue to meet with the Student Advisory Committee during the second year until they have successfully completed their dissertation proposal defense. However, students are encouraged to identify a primary academic advisor and members of their dissertation proposal committee as early as possible in their tenure in the Department. The dissertation must consist of at least four faculty members, three of which have primary or secondary appointments in the Department of Ecology & Evolution.

The advisor will not chair the student's dissertation proposal committee, rather the proposal committee chair must be another faculty member with an appointment in Ecology & Evolution. Non-Departmental co-advisors may be permitted after consultation with the Department Chair. Both the Student Advisory Committee and the Director of Graduate Studies are available to assist students in selection of a primary advisor. Students having identified an advisor shall be expected to consult with the advisor before the
quarterly Student Advisory Committee meetings, thus beginning the transition from coursework to dissertation research.

A student whose advisor leaves the University may continue to have this person as an advisor for not more than one year following his or her departure. After one year, the student must select an advisor with a University of Chicago appointment in the Department of Ecology & Evolution.

**Dissertation Proposal Committee**

Students are expected to have formed a committee for their dissertation proposal hearing no later than the 8th week of the Winter quarter. Any student experiencing difficulty forming her/his committee should consult with the Director of Graduate Studies and/or the Student Advisory Committee.

A Committee for the dissertation proposal defense will be officially formed by the Director of Graduate Studies, in consultation with the student, when the student notifies the Director of Graduate Studies in writing of his/her wish to schedule the dissertation proposal defense. The dissertation proposal committee shall consist of four members, three of whom must have a University of Chicago appointment according to the description above. At least two members of the Committee in addition to its Chair must be members of the Department of Ecology & Evolution, although in extraordinary circumstances this requirement may be altered by the Department Chair.

**Dissertation Proposal**

*At least fourteen days before the proposal hearing,* the student must:

1. Notify the Director of Graduate Studies in writing of her/his intent to schedule a hearing on the dissertation proposal and request that the Director of Graduate Studies officially constitute the faculty committee, as listed, including the advisor;
2. Schedule the hearing room with the Department Secretary in Zoology 114; and
3. Provide the Graduate Program Administrator with a near-final copy of the research proposal to be defended and a copy of the student's memo to the Director of Graduate Studies (above). The student also must distribute the proposal to all members of the dissertation proposal committee.

The written proposal, which should not exceed 5,000 words or 20 double-spaced pages (excluding tables, figure legends, references, etc.), should describe any preliminary results, the proposed research for all components of the dissertation, and its general significance, and should be in the format of a NSF DDIG.

When all requirements above have been accomplished, the Graduate Program Administrator will notify all Department faculty of the dissertation proposal hearing. The Department will distribute notices inviting the University community if an informal public seminar is a part of the hearing.

**Dissertation Proposal Hearing**

Dissertation proposal hearings must be scheduled no later than the Spring quarter of the second year of residence in Ecology & Evolution (normally the 7th quarter of residence). Only under exceptional circumstances will the Chair of the Department allow a student to defer the proposal defense until the Summer or Autumn quarter of the 3rd year of residence. (All requests for such a delay must be made in writing to the Department Chair well before the end of the Spring quarter.) All students will be required to successfully defend their dissertation proposal by the end of the Autumn quarter of their third year (or the equivalent time span if they did not start in the Autumn) or their funding will be suspended until the
requirement is fulfilled. There will be no retroactive reimbursement. Only a medical condition will be considered as a possibly acceptable cause for delaying the proposal hearing.

Consideration will be given to students whose advisors feel that a second year of field research is necessary for successful completion of the dissertation research proposal. Students entering the Ph.D. program in Ecology & Evolution with extensive post-baccalaureate experience should prepare and defend a dissertation proposal by the 5th quarter of residence in the Ph.D. program.

Normally the hearing consists of a public presentation of the proposed research followed by a period of questions and discussion. A subsequent closed session with the student and his/her Committee will be held, led by the Committee chair. All members of the dissertation proposal committee should be present at the hearing. In extraordinary circumstances, the Chair of the Department may allow a committee member to be absent from the hearing. In such a case, the absent faculty member will be consulted for questions by the Chair of the Department.

The Chair of the dissertation proposal committee will inform the Director of Graduate Studies and Graduate Program Administrator in writing of the hearing results as soon as possible after the hearing.

The possible outcomes of the dissertation proposal hearing are as follows:

1) **Pass.** The student’s dissertation proposal is approved by her/his dissertation proposal committee in writing to the Chair of the Department of Ecology & Evolution. The hearing is considered to be the Final Examination for the M.S. in Ecology & Evolution. The Chair of the Proposal Committee shall communicate this decision in writing to the Chair of the Department and the Division of the Biological Sciences, on the appropriate forms. The student shall also be considered as having completed all Departmental requirements for candidacy for the Ph.D.

2) **Conditional Pass.** The student’s dissertation proposal shall be conditionally approved, with qualifications communicated in writing to the Chair of the Department by the chair of the dissertation proposal committee. A copy of this communication will be given to the student. A written timetable for completion of further requirements shall be included which will not extend beyond the 9th quarter of registration in the program (normally Autumn quarter of the 3rd year of residence). Fulfillment of the conditional requirements will qualify the student for the M.S. Degree in Ecology & Evolution and recommendation for candidacy for the Ph.D.

3) **Fail.** The student’s dissertation proposal committee, with approval of the Chair of the Department of Ecology & Evolution (and in consultation with the student), shall recommend that the student either terminate her/his tenure in the Ph.D. program in Ecology & Evolution or reschedule a second proposal hearing within three months. Written conditions for the awarding of a terminal M.S. in Ecology & Evolution shall be provided by the chair of the dissertation proposal committee to the Chair of the Department of Ecology & Evolution with a copy to the student.

Forms for official recording of the results of the Dissertation Proposal Hearing and nomination for Ph.D. and/or M.S. candidacy are required and will be prepared by the Graduate Program Administrator. The forms should be returned, with the required signatures, to the Graduate Program Administrator following completion of the Examination. The Department will then submit the candidacy and examination forms to the BSD Office of Graduate Affairs.
Progress towards the Ph.D. Degree

When a student has passed the Dissertation Proposal Hearing with permission to proceed to candidacy for the Ph.D. degree, a Doctoral Committee will be formed by the Department Chair, in consultation with the student and his/her advisor. The rules for the composition of this Committee are the same as those for the Final Examination Committee (see below), and normally the two committees will have the same membership, although periodic changes in the composition of the Doctoral Committee are permitted.

The Doctoral Committee will meet with second and third-year students at least once a year, and will submit in writing to the Graduate Program Administrator its assessment of the student's progress. This assessment is normally to be based on a written progress report from the student and an oral discussion between the student and the doctoral committee.

The Basic Science Chairs of the Division of the Biological Sciences have adopted the following policy for monitoring the progress of students in the BSD Ph.D. programs:

“Beginning with the fourth year of graduate studies, each student should meet with his/her doctoral committee once every other quarter. It should be the responsibility of the student’s advisor to report a summary of the proceedings of the doctoral committee meeting to the academic unit. The student’s registration for the fifth and subsequent years shall be permitted only if the summaries of the doctoral committee meetings have been reported to the appropriate academic unit.”

Students in Ecology and Evolution should hold these committee meetings in the Autumn and Spring quarters. The Autumn quarter meeting must be scheduled so that advisor can submit a written report to the department Chair before the December faculty meeting. Based on these reports, and discussion in the December faculty meeting, the department Chair and Graduate Program Administrator submit requests for the next year’s fellowships for continuing students to the BSD Office of Graduate Affairs. The budget for the next academic year (beginning July 1) is finalized shortly thereafter, and it includes the maximum number of students the Department can admit for the next academic year.

By December 1, each student should submit the following information to the Graduate Program Administrator: Current CV, Progress Report, Timetable for completion of the Ph.D., Significant publications/abstracts of scientific talks. These materials should be available to the faculty well before the December faculty meeting.

The student is responsible for ensuring the fulfillment of all degree requirements of the University (as set out in the Announcements of the Graduate Programs in the Division of Biological Sciences) and of the Department as indicated in this notice and its successors.

Final Examination for the Ph.D. Degree

1. The Division of Biological Sciences requires a student to have been in candidacy for the Ph.D. degree at least eight months before the degree can be awarded.

As noted in the General Knowledge and Dissertation Proposal Hearing guidelines (above): each student, upon successfully passing each examination, is responsible for submitting the forms for admission to
degree candidacy/to receive a degree. The Graduate Program Administrator will supply the degree forms and the student is responsible for getting them signed and returned. The Graduate Program Administrator will then forward the forms to the Division of Biological Sciences for review and submission to the Registrar’s office.

2. Any student who fails to take the Final Examination within five years (20 quarters) of passing the Dissertation Proposal Hearing shall normally be required to re-defend the dissertation proposal.

3. The student will notify the Department Chair of his/her wish to schedule the Final Examination, after seeking the approval of the Doctoral Committee. The Department Chair will form a Final Examination Committee in consultation with the student's advisor, who will normally be the Chair of the Committee.

4. The Committee will consist of at least five members. The Chair of the Committee (primary advisor) must have an appointment in the Department of Ecology & Evolution. Non-Departmental co-advisors may be permitted, after consultation with the Department Chair. At least two members of the Committee in addition to the Chair must be members of the Department of Ecology & Evolution, although in extraordinary circumstances this requirement may be altered by the Department Chair.

5. The candidate must submit one copy of her/his dissertation and a brief abstract to the Graduate Program Administrator at least 21 days before the date of the Final Examination. The candidate shall provide one copy of the dissertation for each member of the Committee. Arrangements for announcing the examination are the same as those described above for the dissertation proposal defense.

6. The Final Examination shall consist of a public seminar on the subject of the research described in the student's dissertation. A closed session will normally be held at the end of the public examination. At least four members of the Committee (including the Committee Chair) must be present at the examination, with the others submitting written questions or comments.

7. The Committee Chair shall communicate the result of the examination, in writing, on the "Report on the Final Examination" form to the Department Chair. The signed form should be submitted to the Graduate Program Administrator as soon as possible after the examination.

Dissertation and Graduation

After successfully passing the Final Examination for the Ph.D., and receiving the written approval of the Department Chair, the student must submit the written dissertation to the Dissertation Office in Regenstein Library. The student will be allowed to graduate only after the Dissertation Office has accepted a final copy of the dissertation. For more information on the procedures for preparing and submitting the dissertation, please visit the website of the Dissertation Office at http://www.lib.uchicago.edu/e/phd/. Also, you should meet with the Graduate Program Administrator at least 4 weeks prior to the start of your final quarter to review what needs to be done in order to graduate (applying for graduation, the dissertation submission process, etc.).

It is the student’s responsibility to make sure that the dissertation is prepared in a form suitable for acceptance by the Dissertation Office. Students are advised to consult with this office well in advance of final preparation of their dissertation. The Dissertation Office must receive, approve, and accept the PDF
copy of the student's dissertation before the quarterly deadline (usually 3.5 weeks before Convocation) for the student to graduate at the following convocation. Failure to meet the Dissertation Office’s deadline will result in a delay of graduation of at least one quarter. *University regulations require that Ph.D. students be registered for research on campus in the quarter in which they graduate. This means that full tuition and fees for that quarter must be paid.*

The Department will retain the copy of your dissertation sent by the Dissertation Office for microfilming. This copy will be bound and kept for reference (and posterity) with other dissertations in Ecology and Evolution.

Please try to keep us informed about what you're doing and where you are, post-graduation. Your Ph.D. is a major accomplishment, and we would like to stay informed on what you are doing with it!
Ecology & Evolution Course Offerings

ECEV 30950. Evolutionary and Genomic Medicine. 100 Units.

Evolution is regularly investigated in free-living organisms, but some of its most fascinating and important examples occur in the interface between free-living and non-free-living states. In this course, we will use evolutionary and ecological principles to study the dynamics of viruses, unicellular organisms and cells in multi-cellular organisms relevant to human medicine. In EGM I, the emphasis will be on the evolution of pathogens, the evolution of cells of the immune system in response to pathogen invasion, the basis of autoimmune disorders, and the population genetics of cancerous cells in light of recent cancer genomic studies. EGM II will cover more general topics including Darwinian medicine, aging, and systems biology/medicine. This will be a lecture course with substantial reading, presentation, and discussion by students.

Instructor(s): C-I Wu, S. Cobey   Terms Offered: Winter
Prerequisite(s): Background in evolution and population genetics
Equivalent Course(s): BIOS

ECEV 31100. Evolution of Biological Molecules. 100 Units.

The course connects evolutionary changes imprinted in genes and genomes with the structure, function and behavior of the encoded protein and RNA molecules. Central themes are the mechanisms and dynamics by which molecular structure and function evolve, how protein/ RNA architecture shapes evolutionary trajectories, and how patterns in present-day sequence can be interpreted to reveal the interplay data of evolutionary history and molecular properties. Core concepts in macromolecule biochemistry (folding and stability of proteins and RNA, structure-function relationships, kinetics, catalysis) and molecular evolution (selection, mutation, drift, epistasis, effective population size, phylogenetics) will be taught, and the interplay between them explored.

Instructor(s): A. Drummond, J. Thornton   Terms Offered: Winter
Prerequisite(s): Comfort with basic computer programming (course will use Python and R); undergraduate biology, chemistry, calculus, and introductory statistics.
Equivalent Course(s): HGEN 31100,BCMB 31100

ECEV 32000. Introduction to Scientific Computing for Biologists. 100 Units.

The course will cover basic concepts in computing for an audience of biology graduate students. The students will receive basic training in the use of version control systems, databases and regular expressions. They will learn how to program in python and R and how to use R to produce publication-grade figures for their manuscripts, and how to typeset scientific manuscripts and theses using LaTeX. All the examples and exercises will be biologically motivated and will make use of real data. The approach will be hands-on, with lecturing followed by exercises in class.

Instructor(s): S. Allesina   Terms Offered: Winter

ECEV 32900. Plant Development and Molecular Genetics. 100 Units.

Genetic approaches to central problems in plant development will be discussed. Emphasis will be placed on embryonic pattern formation, meristem structure and function, reproduction, and the role of hormones and environmental signals in development. Lectures will be drawn from the current literature; experimental approaches (genetic, cell biological, biochemical) used to discern developmental mechanisms will be emphasized. Graduate
students will present a research proposal in oral and written form; undergraduate students will present and analyze data from the primary literature, and will be responsible for a final paper.

Instructor(s): J. Greenberg  Terms Offered: Spring
Prerequisite(s): For undergraduates only: Completion of the general education requirement in the biological sciences Equivalent Course(s): BIOS 23299, DVBI 36100, MGCB 36100

ECEV 34500. Advanced Topics in Evolution. 100 Units.

While evolution by natural selection is an elegantly simple phenomenon, modern research in evolutionary biology contains a variety of controversial, and sometimes confusing, topics. In this course, we will explore, as a group, a select list of controversial or confusing topics in evolutionary biology through a mix of student-led presentations and discussion of the primary literature. Each student will also write a review paper about his or her selected topic.

Instructor(s): M. Kronforst  Terms Offered: Spring

ECEV 35600. Principles of Population Genetics-1. 100 Units.

Examines the basic theoretical principles of population genetics, and their application to the study of variation and evolution in natural populations. Topics include selection, mutation, random genetic drift, quantitative genetics, molecular evolution and variation, the evolution of selfish genetic systems, and human evolution.

Instructor(s): Steinruecken and Kreitman  Terms Offered: Winter
Equivalent Course(s): EVOL 35600

ECEV 35800. Classics in Evolutionary Genetics. 100 Units.

Major classic papers in evolutionary genetics that had great impact on the development of the field are reviewed.

Instructor(s): M. Long and C-I Wu  Terms Offered: varies
Equivalent Course(s): EVOL 35800

ECEV 35901. Genomic Evolution. 100 Units.

Canalization, a unifying biological principle first enunciated by Conrad Waddington in 1942, is an idea that has had tremendous intellectual influence on developmental biology, evolutionary biology, and mathematics. In this course we will explore canalization in all three contexts through extensive reading and discussion of both the classic and modern primary literature. We intend this exploration to raise new research problems which can be evaluated for further understanding. We encourage participants to present new ideas in this area for comment and discussion.

Instructor(s): M. Long and J. Reinitz  Terms Offered: varies
Equivalent Course(s): STAT 35410

ECEV 36900. Topics in Paleobiology. 100 Units.

In this seminar we investigate paleobiological or multidisciplinary topics of current interest to students and faculty. Previous subjects include the origin of phyla, historical and macro-ecology, the stratigraphic record and evolutionary patterns, and climate and evolution.
Instructor(s): D. Jablonski  Terms Offered: varies  
Equivalent Course(s): EVOL 31900, GEOS 36900

ECEV 34500. Advanced Topics in Behavioral Ecology. 100 Units.

A discussion and critical analysis of behavioral ecology. The course will consist of lectures, reading and discussion.

Instructor(s): S. Pruett-Jones  Terms Offered: Winter  
Prerequisite(s): Common Core Biology, BIOS 248, or consent of instructor.  
Equivalent Course(s):

ECEV 40100. Grants, Publications and Professional Issues. 100 Units.

Covers professional topics in evolutionary biology, primarily strategies in grant writing and review. Each student will work towards the submission of an application of their choice. The course meets weekly and involves extensive writing and discussion.

Instructor(s): J. Bergelson, R. Ho, M. Coates  Terms Offered: Spring  
Note(s): Only open to first year graduate students in the Darwinian Sciences Cluster  
Equivalent Course(s): EVOL 40100, ORGB 40100

ECEV 40200. Advanced Topics in Ethics for the Darwinian Sciences. 100 Units.

This course covers advanced topics in ethics relevant to senior Ph.D. students in the Darwinian Sciences. CEB students are required to successfully complete this course before being awarded the Ph.D.

Instructor(s): M. Coates, P. Herendeen  Terms Offered: Winter quarter of even years  
Prerequisite(s): Open to Ph.D. students in the Darwinian Sciences  
Equivalent Course(s): ORGB 40200, EVOL 40200

ECEV 42600. Community Ecology. 100 Units.

Lectures and readings cover advanced topics in multi-species systems, and include an introduction to basic theoretical approaches.

Instructor(s): J.T. Wootton  Terms Offered: Autumn  
Equivalent Course(s): EVOL 42600

ECEV 42800. Population Ecology. 100 Units.

A lecture course on the empirical and theoretical approaches to the study of natural populations, including field methodologies and quantitative approaches. Includes computer assignments.

Instructor(s): C. Pfister  Terms Offered: Winter  
Equivalent Course(s): EVOL 42800

ECEV 42900. Theoretical Ecology. 100 Units.


An introduction to mathematical modeling in ecology. The course will begin with linear growth and Lotka-Volterra models, and proceed to partial differential equations. The course's perspective will emphasize numerical computations and fitting models to data.

Instructor(s): G. Dwyer, S. Cobey  Terms Offered: Winter

**ECEV 44001. Molecular Evolution I: Fundamentals and Principles. 100 Units.**

The comparative analysis of DNA sequence variation has become an important tool in molecular biology, genetics, and evolutionary biology. This course covers major theories that form the foundation for understanding evolutionary forces that govern molecular variation, divergence, and genome organization. Particular attention is given to selectively neutral models of variation and evolution, and to alternative models of natural selection. The course provides practical information on accessing genome databases, searching for homologous sequences, aligning DNA and protein sequences, calculating sequence divergence, producing sequence phylogenies, and estimating evolutionary parameters.

Instructor(s): M. Kreitman  Terms Offered: Winter
Prerequisite(s): Two quarters of biology and calculus, or consent of instructor
Equivalent Course(s): BIOS 23258
# UNIVERSITY ACADEMIC CALENDAR
## 2018-2019

### Summer 2018

<table>
<thead>
<tr>
<th>Date</th>
<th>Event/Deadline</th>
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<tbody>
<tr>
<td>Monday, June 18</td>
<td>Quarter Begins</td>
</tr>
<tr>
<td>Wednesday, July 4</td>
<td>Independence Day</td>
</tr>
<tr>
<td>Friday, July 27</td>
<td><strong>Dissertation Deadline</strong></td>
</tr>
<tr>
<td>Saturday, August 26</td>
<td>Quarter Ends</td>
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### Autumn 2018

<table>
<thead>
<tr>
<th>Date</th>
<th>Event/Deadline</th>
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<tbody>
<tr>
<td>Monday–Friday, September 24–28</td>
<td>New Student Orientation Week</td>
</tr>
<tr>
<td>Monday, October 1</td>
<td>Autumn Quarter Begins</td>
</tr>
<tr>
<td>Friday, November 16</td>
<td><strong>Dissertation Deadline</strong></td>
</tr>
<tr>
<td>Thursday–Friday, November 22–23</td>
<td>Thanksgiving Break</td>
</tr>
<tr>
<td>Thursday–Friday, December 6–7</td>
<td>College Reading Period</td>
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<tr>
<td>Saturday, December 14</td>
<td>Autumn Quarter Ends</td>
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### Winter 2019

<table>
<thead>
<tr>
<th>Date</th>
<th>Event/Deadline</th>
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<tbody>
<tr>
<td>Monday, January 7</td>
<td>Winter Quarter Begins</td>
</tr>
<tr>
<td>Monday, January 21</td>
<td>Martin Luther King, Jr. Day</td>
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<tr>
<td>Friday, February 15</td>
<td>College Break</td>
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<tr>
<td>Friday, February 22</td>
<td><strong>Dissertation Deadline</strong></td>
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<tr>
<td>Thursday–Friday, March 14–15</td>
<td>College Reading Period</td>
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<tr>
<td>Saturday, March 23</td>
<td>Winter Quarter Ends</td>
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### Spring 2019

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<tr>
<th>Date</th>
<th>Event/Deadline</th>
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<tbody>
<tr>
<td>Monday, April 1</td>
<td>Spring Quarter Begins</td>
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<tr>
<td>Friday, May 17</td>
<td><strong>Dissertation Deadline</strong></td>
</tr>
<tr>
<td>Monday, May 27</td>
<td>Memorial Day</td>
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<tr>
<td>Thursday–Friday, June 6–7</td>
<td>College Reading Period</td>
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<tr>
<td>Saturday, June 15</td>
<td>Convocation</td>
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<tr>
<td>Saturday, June 15</td>
<td>Spring Quarter Ends</td>
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Biological Sciences Division policy requirements for admission to candidacy to the Ph.D. and for the Ph.D. degree

1. Admission to candidacy for the degree of Ph.D. requires:
   a. Completion of Divisional Course requirements (nine courses, up to two of which may be substituted by graded laboratory rotations). A “B” average (GPA = 3.0) must be maintained.
   b. Submission of a written thesis proposal and its defense to the satisfaction of the candidate’s thesis committee (note in some programs this defense also has a public component).

2. Admission to candidacy must occur, or be scheduled to occur, before the end of the student’s ninth quarter in residency (typically the Fall quarter of the 3rd year).

3. If admission to candidacy has not occurred by the end of the student’s ninth quarter then he/she will be unable to register at the beginning of the tenth quarter unless OGPA has approved a detailed plan from the program, student, and thesis advisor in which:
   a. The program adequately explains why candidacy has not yet been achieved.
   b. The student lays out a detailed plan for completion of the thesis proposal, with a timeline that does not extend beyond the end of their eleventh quarter in residency
   c. The thesis advisor provides a detailed plan, which includes frequency and nature of mentoring meetings, to assist the student in satisfactorily completing and defending the thesis proposal

4. Completion of the Ph.D. degree additionally requires:
   a. Completion of Divisional TA-ship requirements
   b. Completion of Divisional Ethics training requirements
   c. Completion of all graduate program-specific requirements.
   d. Submission and oral defense, to the satisfaction of the student’s thesis committee and graduate program, of an original dissertation

Approved Program Chairs.2.12.13