

## Masters of Arts in Ecology, Evolution and Conservation Biology

Last Update: March 2019

The Master of Arts in Ecology, Evolution and Conservation Biology focuses on biological sciences and integrates environmental policy and economics concepts. This interdisciplinary approach provides students with a range of options for building their careers. Graduates of the M.A. program often continue their education in a Ph.D. program or enter the job market directly as scientific researchers, teachers or administrators in a NGO or government agency dedicated to the conservation of natural resources. The M.A. program at E3B is project-based, meaning that all students must complete a **capstone project** as a major requirement for the degree. Capstone projects may be a Research Thesis or a Practical Thesis. Students have the option of tailoring their course work to develop their interests, and to craft a capstone project that allows them to gain additional skills and experience.

### M.A. COURSE REQUIREMENTS

To earn their M.A. degree students must complete:

2 Resident Units (A Resident Unit (RU) is equal to one semester at full-time tuition).

2 Extended Resident Units (EU, used for each semester in the second year of the program)

43 Points (Credits)

#### **All students must complete the following Core Courses:**

1. Fundamentals of Ecology (EEEE GR6112) **and** Fundamentals of Evolution (EEEE GR6110; 3 credits each)<sup>1</sup>
2. Conservation Biology (EEEE GR6905, 3 credits).
3. Four Semesters of Research Seminar (EEEE GR6300, 1 credit per semester).
4. Thesis development seminars (EEEE GR4850 and EEEB GR4851) for 3 credits each.
5. Statistics (EEEE 5005/5015 or more advanced, with approval)

In addition to the core courses listed above, students must also take a balance of course electives as outlined below.

6. One or more Policy electives
7. One or more Ecology/Behavior/Conservation Biology electives
8. Additional relevant electives to meet the 43-credit graduation requirement

A list of courses that meet these elective requirements will be created prior to each semester. Students must consult with the DMAP if they identify a course that they believe fulfills an elective requirement that isn't on the list of approved courses.

To fulfill the program requirements, students must complete the required credits with a combination of elective courses, directed readings and directed research. Students may not take more than 12 credits of Directed Readings/ Directed Research

The M.A. in Ecology, Evolution and Conservation Biology provides for flexibility in tailoring the lineup of

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<sup>1</sup> A student can petition to place out of one or both of these requirements if significantly advanced training in ecology and/or evolution can be demonstrated. The petition is evaluated by the course instructor(s), the DMAP, and the student's advisor. Students that are granted a waiver will still need to meet the 43-credit degree requirement by taking additional elective courses.

courses that is most appropriate for each student's interests. Make sure that you plan accordingly to fulfill the degree's course requirements, and work with your advisor and the DMAP to decide on a set of electives that best suits your interests and career goals. Not all courses are offered every year, so please plan accordingly. You may consult with the DIRECTOR A&F about the future availability of specific courses at E3B, and check with the University's Academic Calendar for schedules in all other Schools and Departments.

### **Minimum Grades**

Generally, the grade of B is considered *minimally* acceptable for graduate students. Students must receive a minimum grade of a B all core courses listed above. One exception is that **B-** is the minimum grade for policy courses. In some cases, students may negotiate with the instructor to complete extra work to raise their grade. However, this is in no way guaranteed. Any such work must be completed by summer semester after the course in question

Students receiving less than a B will get credit for the course, unless they receive an F. All credits count towards your degree, but students need to maintain a 3.00 GPA each semester. Part-time student's GPA will be calculated once 12 credits are completed. Students with a GPA below 3.00 will be placed on academic probation. Students who fail to improve after one semester will be referred to faculty for further action. This may include dismissal from the program.

Students are not allowed to graduate if their GPA falls below 3.00.

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### **THE CAPSTONE PROJECT**

The Capstone Project gives students the opportunity to design, participate, and carry out a research, outreach, or education activity as the culmination of their training at E3B. The Capstone Project is designed to be flexible, allowing students to explore a variety of activities and potential outputs. Students must work with their advisors, committees, and the DMAP in identifying a suitable project. Capstone projects may be a Research Thesis or a Practical Thesis. For both types of Capstone projects, a project proposal must be approved by the committee (see below) and the DMAP by the end of the first year. Generally, the DMAP and the project advisor will make the final decision about the proposed work and approve proposals that (a) are considered suitable for a M.A. degree project, and (b) are in line with the study program of the student.

Due to the flexible nature of the Capstone Project, the final outcome of your work can take many forms. However, all projects must include: 1) A substantial body of work that demonstrates independent critical thinking, synthesis, and analysis in your field; 2) a final written summary; and 3) a presentation in a special research seminar, scheduled for the last week of the spring term for all graduating students to present their projects to the broader E3B community.

We strongly encourage products that are publishable in the peer-reviewed literature, especially for students wishing to pursue a Ph.D. or a career focused on research. We also highly recommend depositing the final version in the Columbia Academic Commons, an open access repository for scholarly works.

Students will receive up to 12 credits for their field work, data collection and research activity by

registering for Directed Research; the actual number of credits awarded will depend on the overall work load (See 'Scheduling Field Work' below).

## RESEARCH THESIS

A Research Thesis must include original data-collection and analysis components and can be based on research in the field, the laboratory, and/or analysis of pre-existing data. Students pursuing a thesis-based Capstone Project will spend a considerable portion of their registered time working on research that leads to a final thesis. Research work for the thesis is generally carried out within the context of ongoing research activities of the E3B Department or the partner institutions. Students are also welcome to discuss research options outside the Department and the consortium with the DMAP. Students should be able to conduct their research work within an external project as long as (a) the research is considered suitable for a Master degree thesis, (b) it is in line with the study program of the student and (c) there is a suitable Advisor willing to mentor the student.

The M.A. Research Thesis is traditionally shorter than the Ph.D. dissertation, but should still be of publishable quality. The general requirements for formatting are the same as those of the Ph.D. dissertation, which are posted online at: <http://gsas.columbia.edu/content/formatting-guidelines>

Most Research Theses follow a journal manuscript format; that is, they include an introduction, materials and methods, results, discussion and conclusion sections. Students should work with their committee to develop the formatting expectations for their thesis well in advance of its submission for final reading.

## PRACTICAL THESIS

The Practical Thesis must demonstrate the student's ability to apply the science of ecology, evolution and/or conservation biology to a problem, challenge, or need. A successful Practical Thesis will combine research, academic comprehension, and relevant skills into a coherent final product. A Practical Thesis does not necessarily require original data collection and analysis, but does require substantial scholarly contribution to a carefully-designed final product. Practical Theses should be developed in consultation with stakeholders or relevant practitioners, and students should design their project committee to include member(s) of these groups. Examples of Practical Thesis projects include, but are not limited to, design of and/or significant work in:

- Courses, curricula or other educational activities
- Museum, botanical garden, or zoo exhibits
- Outreach programs, including innovative media products
- Software, web-based, or other forms of innovative analytical, research, or educational tools

## ADVISORS AND COMMITTEES

All students need to form a committee with 3 members for their capstone project. This committee must include a **project advisor** and two additional committee members. Two members must be affiliated with E3B/EICES (Earth Institute for Environmental Sustainability), and you must have one core CU/E3B faculty member on your committee.

Project advisors must be selected in the first semester of study. Project advisors need to be E3B/EICES

faculty members<sup>2</sup>. If you are having problems finding an advisor, please contact the DMAP. A project advisor plays an important role in providing MA students with guidance and direction for their capstone project including for project scoping, study-design, logistics, data analyses, and writing. Guidelines on the effective practices and expectations for E3B MA Project Advisors and Student Advisees should be discussed and agreed upon with all committee members.

The additional 2 committee members should be discussed with your project advisor and the DMAP. Committee members should have expertise in some component of your project and should be able to contribute to your training and the completion of your project by providing you with specific resources, critical review, and/or career guidance.

Ideally, the 3 committee members will be identified in the Fall term of the first year, but if that is not possible **all students should have identified at least 2 members of their committees by the last day of the Add/Drop period in the Spring term of their first year** (around the first week of February). You should inform the DMAP about the composition of your committee as soon as any changes occur, using the 'MA Thesis Committee Member form' provided to students.

### SCHEDULING FIELD WORK

Fieldwork is generally carried out during the summer semester between year 1 and year 2. Students will get up to 12 credits for their fieldwork by registering for directed research in the Fall semester of year 2. The faculty recognizes that it is sometimes difficult for students to complete all of their field research for the M.A. thesis in just one summer. Therefore, research thesis-based M.A. students may request a **Research semester**, which allows them to spend one of their four semesters in the field conducting research, in addition to the summer period.

Whether it is wise for a student to extend fieldwork in this manner is a decision to be taken carefully in consultation with the student's entire committee and the DMAP. Requests for a research semester must be submitted to the DMAP by the end of the summer semester between the first and the second year and need to be clearly motivated and in line with the student's research and course completion plans. A careful review of any outstanding core requirement will be performed before authorizing a student to take a *Research semester*. Students who spend one semester in the field will not be expected to register for the Research Seminar during that semester.

### FUNDING PROJECT WORK

Students may apply for the E3B MA Student Research Grants for up to \$1,500 to support their thesis project (pending the availability of funds). These grants are typically applied for in the second semester of the degree. Grant applications require a project description and budget, and allocated funds must be used for the purposes described in the grant application.

### CAPSTONE PROJECT COMPLETION

**The final Capstone Project is due for deposit in the department on the Wednesday before Commencement.**

For students graduating during the Spring semester: In April, students receive a form which needs to be

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<sup>2</sup> If you are uncertain of a faculty member's status, check with the Director of Administration and Finance (DIRECTOR A&F), the Director of Graduate Studies (DGS), or the Director of the MA Program (DMAP).

signed by their advisor and committee members to approve the Capstone Project and recommend the student for degree conferral. This form is due the Wednesday before Commencement. It is the student's responsibility to obtain the signatures from all the committee members. If a member will be out of the country, please make appropriate arrangements in advance, and note that in such a case, a faxed signature will likely be acceptable (confirm with the DIRECTOR A&F in advance).

All capstone projects require substantial amounts of time to complete. As a general rule, plan to submit a working final draft to your committee by mid-March in order to allow the committee members sufficient time to suggest revision. Students cannot assume committee members will be able to review a final draft in less than two weeks; as readers, they must have 14 days. Please note that agreeing to take less time for reading is an extreme sign of courtesy. Faculty members are very busy at the end of the term, and they may not be able to be so flexible (nor are they in any way expected to be).

Students will need to submit a bound hard copy and an electronic version of their Capstone Project, along with the signed Thesis Approval Form to the E3B DIRECTOR A&F by the Wednesday before Commencement. Black thesis/dissertation springback binders are available from the Columbia bookstore. Electronic submission is required- a complete copy of your capstone project must be EMAILED as a pdf to the DMAP and DAAF, we also encourage you to submit your work to the Columbia Academic Commons and to archive your data. Theses may eventually be put on the E3B website for public access.

## **GRADUATION**

Students MUST apply to graduate by the applicable deadline for their desired commencement ceremony. See the [Registrar's website](#) for up-to-date graduation application dates.

## **PROGRESS REPORTS**

MA students are expected to schedule a meeting with the DMAP once per semester to evaluate progress and discuss future options. The meetings are informal, but will help students keep on track with their studies. This meeting allows the faculty to assess a student's progress at regular intervals, and to intervene for both the students' and the graduate programs' benefit when conflicts or problems arise.

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Additional Information

## **READING ASSISTANTSHIP**

M.A. students have the option of registering with the Department for paid Reading Assistantship in undergraduate courses. Reading Assistants support a course instructor throughout a semester. The Reading Assistantship will allow students to develop additional skills for a variety of professional directions that they may choose to follow. Reading Assistantships are voluntary and limited in number based on the needs of the department and allocations from the Graduate School of Arts and Sciences. The DIRECTOR A&F will send out a request during the spring semester for interested students to indicate their availability during the following academic year.

## **INTERNSHIPS FOR M.A. STUDENTS**

Pending consultation with and approval of the DMAP, students may use internships as substitutions for elective coursework. Registration for Directed Research ensures that credit will be given for the work.

## DIRECTED READINGS

Students may elect to work closely with a faculty member on a targeted course that satisfies. Students can choose to substitute one of the electives in Conservation science with a directed reading or a directed research. Students must secure approval of such a substitution in advance, using the Directed Readings form. Directed Readings cannot be used to satisfy the policy elective. Such substitutions will be approved only if it can be demonstrated that Directed Readings provides a learning experience that is not available in course format. Directed Readings used for thesis work are not acceptable as a substitute for an elective course.

## TRAVEL TO MEETINGS

Pending the availability of funds (see Appendix 3), M.A. students can receive up to \$450 from the department in support of travel to a scientific meeting (approved by the MAPA) any time during their 2-year studentship. In most cases, students are likely to attend meetings in their second year, when they have the greatest chance of presenting their own research (which is strongly encouraged!). The student must be enrolled in the M.A. program in order to be eligible for reimbursement. Students are also encouraged to apply for matching funds from GSAS for conference attendance.

Reimbursements for travel and business expenses will be made **AFTER** the trip has occurred. Lodging, travel expenses and registration fees can be reimbursed. To receive reimbursement, you must:

- i. provide documentation that you actually attended the conference (e.g. a registration receipt).
- ii. submit your Travel Business Expense reports within 2 weeks of arriving back to the USA.
- iii. fill out your forms online from the E3B website at:  
<http://e3b.columbia.edu/resources/>
- iv. Submit original receipts. If you pay with a credit card, you will also need to submit a credit card statement showing the expense(s) in question.
- v. if you make purchases in a foreign country, you must get the currency conversion for the exact dollar amount. Use <http://www.oanda.com/> this is the only site Accounts Payable will honor.

Some general words of advice regarding reimbursement procedures:

Advance planning is critical: inform yourself in advance of the expenses that can be covered, and how to process the paperwork to get a reimbursement. The DIRECTOR A&F or the Administrative Assistant can help you here. If established procedures are not followed, your account with the University may be jeopardized (you may not get reimbursed), especially since these transactions may be audited by the IRS (Internal Revenue Service).

It takes about *two weeks* for the University to process payments after submission of documentation. During the summer, be aware that June 30 is the end of the fiscal year. If you attended a conference before June 10, be sure to present your paperwork for reimbursement by June 10 at the latest. **When you travel, always keep all your original receipts. They are essential.**