

Master's Project Handbook

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Introduction to the Master's Opus

As part of their degree requirements, all SEAS master's students must complete a project, thesis or practicum. All master's students are admitted as project students. The project option gives students a team experience that approximates future work environment. Students can petition for the thesis option when they plan to conduct original research and produce a scholarly work. Although students are not admitted under the practicum option, a student may petition into this option under circumstances described below.

Projects, theses, and practica share common academic expectations and provide different educational experiences. Regardless of the opus type, all include the following academic expectations:

- the mastery of an appropriate set of academic material;
- an understanding of the major steps of the scientific approach (research design) or decision analysis (evaluation of management alternatives) and the successful application of these steps to an environmental problem;
- the ability to demonstrate critical thinking about an environmental problem and the application of appropriate analytical techniques in solving that problem;
- experience in both writing a scientific paper or technical report and giving an oral seminar to peers on the process and results of the study; and
- Faculty evaluation of the final product.

Occasionally, students wish to substitute another opus option for the one they were admitted to complete. SEAS's policy is that changes in the form of the opus must be supported by a faculty advisor and approved by the Associate Dean. Students should submit a written statement that explains why this change is needed. Project students who wish to substitute a thesis must show that they have had or will acquire the integrative team problem-solving experience missed by not participating in a project. In addition, a student may petition the Associate Dean to undertake a practicum as his/her opus work. The practicum is an individual experience, often developed around an internship experience or the design of a project (see the Practicum Handbook.)

To request a substitution, use the [Petition to Change Master's Opus form](#). SEAS established these substitution requirements to protect the focus and intention of the different Masters options. Petitions will be evaluated on the basis of the rationale for substitution and the availability of faculty resources to support the proposed opus. Such changes must be approved by the Associate Dean. All petitions must be accompanied by an advisor approved [Development and Mentoring Plan for Master's Students form](#).

Master's students who wish to change their opus option should submit their petition to change opus by the drop/add date of their second semester (or fourth semester for three-year or dual degree programs). Students who are enrolled in NRE 701.888 (Project Planning Session) and wish to change their opus option need to make their decision in advance of this deadline or expect to continue with the course through completion.

What is the Master's Project?

The Master's Project is an interdisciplinary group project in which students work closely with a faculty member to analyze and propose solutions to a real-world environmental problem. Each project requires both individual analysis and reporting as well as interdisciplinary analysis conducted by the group. Projects provide an integrative team-focused experience that approximates the work-world. The majority of SEAS masters students fill jobs that involve interdisciplinary, group-based problem solving. At least one presentation to the SEAS community of the group's findings is required. The group is also responsible for completing a single written document, which is to include an abstract.

Master's Projects began as a result of SEAS's awareness that most work being done in natural resources, sustainability, and environmental protection involves interdisciplinary, group-based problem solving. Preparing students to work in such settings is one of the goals of the Master's Project. In addition, the Master's Project format helps to concentrate the efforts of both faculty and students to promote timely completion of their work.

The format of a project differs from a thesis largely because it is an interdisciplinary team effort resulting in a jointly authored document about some real-world environmental situation. Another acceptable version of a project is an integrative seminar course, which falls under the same rights and responsibilities as a regular master's project. Such a seminar will result in 6 credit hours of activity (3 for the seminar and 3 for the research) and will produce a jointly authored document, equivalent to a master's project. It will be based more on literature and current thought than on a real-world problem. An integrative seminar will be defined by faculty or established by students under the advisement of faculty.

Project Structure and Planning

General Structure

The Master's Project experience is a 6 credit effort spread over 3 or more terms. The Master's Project Course (EAS 701, section 888 - January/February) is required of all project students and elected for 1 credit in the winter term of the first year of graduate residency (or the second year for Erb or 3-year MLA students). Students in a joint master's program between SEAS and another unit can join the project class in either their first or second year. In this course, students form projects, establish team memberships, and determine initial plans, scope, timetable, and budget. The remaining 5 credits of NRE 701 consist of the actual project and are elected before graduation.

Developing a Topic

The process for forming master's project groups provides opportunities for students across the various disciplines in the School to discuss their respective interests and skills and to develop project topics.

Faculty members sometimes suggest project topics. Some topics are suggested by outside sponsors who contact the School. The Master's Project Administrative Coordinator will help develop and coordinate projects, while working in conjunction with clients, faculty and students. It is critical that students avail themselves of every opportunity to learn more about project possibilities and to share their own ideas with fellow students and faculty colleagues.

The planning process for master's projects begins informally during fall term with informational sessions for all students intending to participate in a master's project. Sessions may include general orientation about navigating the project timeline, interim presentations by current or past project groups, and/or exploration of current project ideas. These early meetings are extremely important for students to begin thinking about potential project ideas, to get to know students from other parts of the School, and to develop a better idea of the scope of work expected in a group project. The Fall term concludes with a faculty committee review of all preliminary proposals to ensure that those topics are presented in the Master's Project Planning Course are rigorous, interdisciplinary, and can be completed within the proposed timeline.

Developing a Project Workplan

EAS 701.888 includes discussion of preliminary projects, and includes skill-building in project management, proposal writing, and group dynamics. As project teams are formed during the course, teams must seek out

a faculty member to serve as Project Advisor. The EAS 701.888 instructor will have a list of available faculty from which to choose, but students may ask other faculty too.

The Project Advisor should be a regular SEAS faculty member or an instructor specifically hired for the role of Project Advisor. Where it is necessary to identify an advisor that is not an SEAS faculty member, that individual shall be approved by the Director of the Office of Academic Programs and the Associate Dean for Academic Programs, and that individual shall be compensated at a rate determined by the SEAS Director of Budget and Administration. Occasionally, projects may have two co-advisors. In cases where one of the co-advisors is a researcher or faculty from an outside unit, the SEAS faculty member will be the primary advisor. The role of the Project Advisor includes the oversight of both the development of the project proposal and the daily business associated with implementation of the project. The Project Advisor also assigns final grades to team members. In the case of co-advisors, the SEAS faculty member will be responsible for assigning final grades.

In March, project groups are expected to develop an interim proposal. The project group should include approximately four to six members whenever possible to optimize the use of faculty advising, focus interdisciplinary teams on the project topic, and ensure broad coverage of the topic area. By the end of the winter term, teams must submit a final proposal (a more complete proposal that includes a plan for how work will be accomplished) to the NRE 701.888 course instructor in order to receive an S/U grade for the class. All final proposals should contain the following:

- Clear educational objectives;
- The anticipated research question, tasks, and products;
- A description of the project's interdisciplinary components;
- A description of each team member's academic or previous professional preparation to undertake the tasks that will be their responsibility in the work plan; and
- A clear explanation of the criteria used/client & academic deliverables to determine the final letter grade (A-E) for each student.

At the end of the master's project planning course, the NRE 701.888 instructor or GSI submits your group information [student & project advisor names, project title, and client information] to the SEAS Registrar. The SEAS Registrar will assign a project number (NRE 701.xxx) for course registration, and will notify students when a class number has been assigned and they may register for their remaining five credits anytime over the next three terms.

Developing a Proposal

The proposal is an agreement between student team and the client. Once the research scope is defined and proposal is written, the research is student driven. An important aspect of our degree program is to train students to be leaders and innovators; client input is welcome but students ultimately drive the shape of the final product. Thus the proposal is an important step in the master's project process. The written proposal, agreed upon by team members and clients, should include the following information before research begins:

- clear educational objectives;
- the anticipated research question, tasks, and products;
- a description of the project's interdisciplinary components;
- a description of each team member's academic or previous professional preparation to undertake the tasks that will be their responsibility in the work plan
- anticipated timeline of project and deliverables

Further information to discuss and put in writing with the client and team members before the project begins:

- Ownership of data/survey and the guidelines and restrictions put upon students by U-M Institutional Review Board (IRB)
- Description of the deliverables;
- Discussion of permitted client project feedback vs client project supervision

Teams might also want to review and share the Information for Clients document during the proposal construction.

Funding for Projects

The Master's Project Funding is intended to defray costs of conducting clearly defined group research activities including:

- Research related expenses (e.g. paying subject fees, accessing specialized data sets, purchasing archival materials, purchasing images, hiring field assistants)
- Research-based travel not associated with a course (e.g. off-campus data collection, access to libraries, archives or historical sites)
- Purchasing laboratory equipment, field work equipment, or computer software
- Off-campus study of foreign languages needed for research. Proposals will be considered only if the instruction is not available on the UM-Ann Arbor campus. The relevance of the language studied to the student's research must be explained in the proposal.
- Off-campus study of specialized methodologies or techniques needed for research. Proposals will be considered only if instruction in the methodologies and/or techniques is not available on the UM-Ann Arbor campus. The relevance of the methodologies and/or techniques to the student's research must be explained in the proposal.

A funding proposal describing the research project/practicum (maximum of 1,500 words) is due for all students in a Master's Project or Practicum. Each project/practicum group will submit one overall funding proposal. The requirements are described in the Guidelines for SEAS's [Master's Project and Practicum Funding Instructions](#).

Your master's project advisor should give you guidance on creating a budget. The project budget guidelines and template can be found online. Before submitting any budget requests to OAP, your faculty project advisor needs to approve your budget.

If your academic travel (conference, research, internship, project/thesis work) takes you out of the U.S., you are required to register via the [U-M Travel Registry](#) and purchase the [U-M Travel Abroad Health Insurance](#). The health insurance is required even if you currently have insurance which provides for international travel. OAP verifies your registration and purchase the health insurance, and then will distribute the funds to your student account.

Division of Workload

A maximum of 6 credit hours can be used for the master's project, and should be taken before or during the final academic term. Generally, all students are expected to contribute equally to the project.

Sometimes students will work on the project during the summer, but careful coordination and planning are required to ensure a fair and equitable workload among project team members. In addition, the Project Advisor is often unavailable during the summer; this requires prior planning on the part of project team members if they need access to a faculty member during this time.

Implementation of the project can be divided into three main categories: administrative tasks, project design, and substantive development. The following discussion addresses requirements for the first two topics; substantive requirements should be developed by the sponsoring faculty, with help from the project participants.

Establishment of Working Space

To reserve space for your Master's Project group, email SEAS-rooms@umich.edu and specify group size, date, and time of your request. There will be no designated office space available for project teams. Each project group will be able to reserve a classroom to use as needed. If you require a conference room for a meeting or phone call with your client, please note any special equipment needs in your email request.

Establishment of a Student Project Business Manager

Each project team should appoint one of its members as business manager. The purpose of a business manager is to centralize budgetary activities, facilitate coordination with project related purchases, and work with the SEAS Business Office Manager for any external funding support distribution. More details are below.

Budget Development

Development of the budget is the project team's responsibility and must include projection of both funding and expenditures. The group must operate within this budget unless additional funding is obtained. Cost overruns must be covered by the project team members. Failure to balance the account may result in a university hold credit. Funding may be allocated by the School, received from a sponsoring organization, accumulated by additional fundraising, provided by team members, or a combination of the above.

Contingent upon justification, the School may allocate up to \$1500 per student to the project. This funding will be made directly to the students through their student accounts and then either to a bank account (if the student has direct deposit authorization) or by check (mailed to the current address on file in WolverineAccess). Please refer to the [Project Funding Guidelines](#) for eligibility, procedures, and application materials. Students are encouraged to pursue outside funding options (beyond the client).

Please coordinate external sponsorship from the onset with the SEAS Business Office. External funding should be reflected on the project proposal budget. The faculty project advisor is responsible for ensuring that such pursuits comply with all University requirements and procedures regarding the solicitation of outside funding.

External funds (funding from clients, for example) are not normally distributed directly to the students (tax implications and financial reporting are the top two reasons why organizations would rather give to a registered non-profit 501c3 institution such as U-M). Projects with externally funded master's project monies will be assigned a Project Grant number since expenditures will be made through the U-M. The faculty project advisor will be responsible for all funds within that budget, so the Student Project Business Manager should work closely with him/her. The Student Project Business Manager must approve all expenditures on externally funded projects before requesting payment from the Business Office.

It's each group's responsibility to develop an expenditure list to include in the budget. All projected costs associated with the project should appear in this listing, including the purchase of maps, phone calls, travel, etc. If project groups have multiple sources of funding, it is best to divide the list into costs that can be met using SEAS funds and those covered by other funds. This allocation of costs will help group members and faculty to plan for costs that may have to be incurred by the members of the group.

Outside funding may be used to meet those costs, but it is not unusual for students to bear some of the costs.

Any project with an external client who requires financial reporting from the University needs to be set up with the SEAS Business Office. As well, under certain conditions, a project group may need to run all or part of their internal dollars through the Business Office in cases where there is a need to hire an employee, purchase computers or software under the University's license agreements, or utilize services like bulk mail. Each project must operate within the budget established for it. The SEAS Business Office manages the funding and spending of all externally funded projects as well as internally funded projects that meet the above criteria. The Business Office is also where Student Project Business Manager's arrange for reimbursement of budgeted expenses, such as travel and research supplies in addition to purchase orders. The Student Project Business Manager must coordinate and approve all expenditures before payment is requested from the Business Office. This encourages the project team to maintain good records of project costs on an ongoing basis, avoiding surprises as the project continues. Processing travel vouchers and other reimbursements often takes 4-6 weeks. Original, itemized receipts are required for all reimbursements.

Student Project Business Managers with funds managed by SEAS may place orders via the Business Office to M-Marketsite (the University's online catalog ordering system) and the amount will be billed directly to the project. Requisitions for supplies are created in the SEAS Business Office. The Business Office oversees all

project externally funded budgets. Please contact the Business Office for a budget's current status only after the faculty project advisor has been consulted. Billing to a project account must be completed by the end of the term in which the project is completed.

Non-Disclosure Agreements and other documents needing Institutional Approval

At times, clients will ask students to sign non-disclosure agreements, due to the nature of the data. Students should not sign documents on behalf of the University of Michigan. We don't want students doing private client work that is not to be shared with the broader community. We also don't want clients exercising control over what parts of the students work can be published or not. The U-M Office of General Council has developed a working draft of a proposed NDA for SEAS project students, to be used as needed - not required.

All opus work concludes with a publishable document. Whatever proprietary statement is signed cannot prohibit your work to be shared with the general public, but you can work with the client to help protect or mask the proprietary info in your publishable document. For example, instead of identifying specific supplier names, one can use the pseudonym Supplier X.

As a general rule, the University (not students) sign agreements with providers of materials and data used in projects before the transfer can take place. These agreements often include terms and conditions regarding intellectual property (IP) rights, publication privileges and restrictions, confidentiality of information, indemnification and warranty provisions. Negotiations of the terms of the agreement with the provider often are necessary. Such negotiations are conducted by the U-M's Office of Research and Sponsored Projects (formerly DRDA), who have expertise in negotiating terms and conditions related to openness of research. Please contact the SEAS Business Office for guidance.

To the extent possible, the University seeks to avoid the acceptance of terms and conditions that impose liabilities or obligations. It is not possible to evaluate the seriousness or the likelihood of potential liabilities and obligations for the University without knowing something about the materials being transferred and how they are to be used. If there are other documents from the client needing institutional approval, such as a contract, please contact the SEAS Business Office for guidance.

Will you need to involve U-M Institutional Review Board? Plan ahead!

All activities conducted by UM faculty, staff or students that involve research with human subjects as defined by the federal regulations, including those conducted for undergraduate honors thesis, master's thesis, or doctoral dissertation, are subject to IRB review or exemption. The University of Michigan is responsible for ensuring that the rights and welfare of research participants, or human subjects, are adequately protected in research conducted by its faculty, staff and students. Federal laws require this protection, and in order for the University to fulfill its responsibility, all research involving human subjects must receive appropriate review and approval. Please keep this in mind as you are working through your project proposal and timeline expectations.

Grading

All participants are responsible for the project as a whole, not just their own portion of the project. The project advisor is responsible for the final letter grade each student receives for the project (A-E). Advisors may choose to share with students the responsibility for developing the criteria for grading.

In addition to the above, all participants should remember that students are permitted to enroll in a project only during the term in which they are actively working on the project. If the project will span multiple terms, students must be made aware of the credit load for each semester at the onset of the project. Responsibilities for each of the terms must be clarified at the same time.

Unless it is the final term of the project, all students in the group will receive a "Y", meaning that the project is ongoing and the work continues after the term ends. Final grades for a project will be assigned at the end of the final term for the project.

If some students have not completed their portion of the project during a term, the faculty project advisor is responsible for ensuring that the following procedures are used. If it is the final semester of the project, the student is assigned an "I" or incomplete. Students who will have completed their work on the project should

reach an understanding with those who may not be finished by the end of the term as to final details of the project production and distribution and who will be responsible for carrying out those details. It is strongly advised that students reach an accord on this point well before the end of the final term. The group as a whole is held responsible for the final completion of their project which includes final editing, production, distribution, and so on.

Timeline

A timeline allows for planning the general direction of the project and helps to avoid both overlapping of work and last-minute rushes. Deadlines for IRB approval, DRDA reviews, presentations, drafts, site visits, formal presentations, etc., should be included within the timeline.

Format for Page Layout

It is important for group members to establish page layout formats early in the project. This allows members to produce illustrations, photos, tables, etc., in the correct size, avoiding last-minute problems. It also allows for better use of style options available with some of the previously discussed software packages. Margins, title sheets, type styles (fonts and sizes), illustration style, and the like should be addressed. Map, plan, and similar formats should also be discussed at this point. (View format guidelines.)

Images often play a key role in a group's report and final presentation. Establishing guidelines for types of images early in the project helps to avoid last-minute field trips to re-shoot. While it seems like a simple task, it often takes time because individuals have their own preferences or may be unfamiliar with specific needs.

Project Completion Requirements

The following requirements must be met before a project is considered complete by SEAS. These completion requirements must be fulfilled prior to graduation for members who wish to graduate at the end of the term. The student must have enrolled in at most 6 credit hours of NRE 701 (this includes one credit for the Master's Project Planning course). Each project must culminate in a written document.

Written Document

The final report should be uploaded directly to MBox. Jennifer Taylor, the School Registrar, will provide you access to MBox to upload your final document(s). You will also need to submit, in hard copy, the signed [Opus Verification Form](#) and [Deep Blue License Agreement](#). The finished copy of the final report required by the School must be uploaded by 5:00 p.m. on the last day of scheduled classes for the term in which the degree is expected. Failure to submit this copy will delay your graduation.

The copy of record for all SEAS opus documents is stored in "DeepBlue". DeepBlue, maintained by the Shapiro Science Library, is the University of Michigan's permanent, safe, and accessible service for representing our rich intellectual environment online.

Presentation(s)

The School requires a presentation of the group's findings, open to the SEAS community. SEAS hosts a Capstone Conference at the end of each Winter term where all students can present their opus work. Please note, that failure to present at your given time during the Capstone Conference, could delay your graduation. Students who miss their presentation will need to work out an alternative presentation time with the Associate Dean for Academic Programs. Notification of the new event needs to be sent to the SEAS community. In addition, the group's findings may be presented to other groups and organizations (e.g., the sponsoring organization, natural resource organizations who are interested in the topic, community groups).

Evaluation

Evaluations provide an opportunity to determine the success of a project and guide any future changes. As such, each group member will receive a course evaluation pertaining to the project advisor at the end of the final project term. Students may also submit a written evaluation to the Office of Academic Programs which focuses on their client, if such will be useful for future project groups.