Bren School of Environmental Science & Management
University of California, Santa Barbara

Group Project Guidelines
MESM Class of 2021

INTRODUCTION

These guidelines define the Bren School's expectations for Master's Group Projects and explain the process, timeline, and required deliverables.

Master's Group Projects are a unique and important component of the Bren School's approach to environmental science and management. The School developed the Group Project process in direct response to prospective employer requests that Bren graduates possess "real world" skills. These skills include excellent academic training as well as the ability to successfully work and communicate as a member of a team and manage a professional project. The Group Project provides students an opportunity to work together to design, conduct, and present professional interdisciplinary environmental research.

Without exception, all students pursuing the Master of Environmental Science and Management (MESM) degree must successfully complete a Group Project or an Eco-Entrepreneurship (Eco-E) Project. For more information about Eco-E Projects, see the Eco-E Project Guidelines.

Students who pursue Group Projects collaborate with outside clients, which may be from industry, government, or non-government organizations. Clients must present a problem that can be addressed and solved by the Group Project.

All Group Projects begin in Spring Quarter of the first year of study and end in mid-Spring Quarter of the second year. The project requires:
- an environment in which the students can learn to operate as an independent professional team;
- a spirit of trust and collaboration by all parties;
- limited client involvement to allow students to develop their own ideas and approaches;
- healthy and professional communication and rapport among all parties; and
- the ability of students to choose courses of action, make mistakes, and learn from those experiences.

GROUP PROJECT TIMELINE OVERVIEW

Below are the key deadlines in this year's Group Projects. Note that faculty advisors or clients may request additional milestones and may set internal deadlines for drafts or other materials in addition to deadlines listed here.

Spring Quarter 2020	
Fri May 8	Draft Work Plan due to faculty advisors
Mon May 18	Feedback from faculty advisors due back to students
Fri May 22 (Week 8)	Send revised Work Plan to faculty advisors, client and external advisors by May 22 or one week prior to work plan review meeting
By Fri Jun 5	Host work plan review meeting with faculty advisors, client and external advisors by this date
By Fri Jun 12	• Submit 1-page summary of work plan review meeting to faculty advisors; • Submit final work plan to faculty advisors, client, external advisors, and Group Project Coordinator; • Send web link for website to GP Coordinator • Submit Self/Peer Evaluation to faculty advisors and GP Coordinator

Fall Quarter 2020	
By Wed Nov 25	Host fall review meeting with faculty advisors, client, and external advisors by this date
By Wed Dec 2	Submit 1-page summary of fall review meeting to faculty advisors
Fri Dec 11	• Submit outline of Final Report to faculty advisors; • Submit Self/Peer Evaluation to faculty advisors & GP Coordinator

Winter Quarter 2021	
Fri Feb 5	Draft of Background, Methods, and preliminary Results sections of the Final Report due to faculty advisor
Fri Feb 5 & 12	Master's Project Faculty Reviews
Fri Feb 19	Complete draft of Final Report due to faculty advisors
Fri Mar 19	• Final Report (.pdf version) due to faculty advisors and GP Coordinator; • Submit Final Presentation Program Abstract to GP Coordinator (Template sent out by GP Coordinator 2 weeks prior); • Submit Self/Peer Evaluation to faculty advisors and GP Coordinator

Spring Quarter 2021	
Fri Apr 9	Drafts of Project Brief AND Project Poster due to faculty advisor
1-2 weeks before Final Presentation	• Take group photo w/ Faculty Advisors to use as the first slide in the Final Presentation; • Submit draft Final Presentation to faculty advisors for review
Fri Apr 16	Final Project Brief and Project Poster (.pdf version) due to faculty advisor & GP Coordinator
No later than Mon Apr 19	Print Final Poster and Project Briefs
Fri Apr 23	Master's Project Final Presentations

1. **GENERAL INFORMATION**

A. Group Project Timeline

MESM students begin their Group Projects in the Spring Quarter of their first year of study and complete their projects by the middle of Spring Quarter of their second year of study. Master's Project Faculty Reviews, including both Group Projects and Eco-E Projects, are held in the middle of Winter Quarter, with the Final Report due at the end of Winter Quarter. Master's Project Final Presentations are generally held on Friday of the fourth week of Spring Quarter. The timeline overview provides deliverable due dates. Working with their faculty advisors, groups define their own deadlines for intermediate products.

B. Academic Units and Grading

Students must register for ESM 401A, 401B, 401C and 401D for a total of 14 units in spring, fall, winter, and spring, respectively. The group's faculty advisor(s) grade(s) all ESM 401 courses and the grades will be assigned at the end of their respective quarters.

Students must achieve a grade of B or better on their Group Project to be eligible for the MESM degree. Students working together on a project may not necessarily receive the same grade. Additionally, students cannot be recommended for graduation until they have submitted an approved final report.

By the last day of each quarter, students are required to complete and submit a Group Project Peer and Self Evaluation Form to their faculty advisor and the Group Project Coordinator. These evaluations will be considered by the faculty advisor when grades are being assigned. This form can be found on the Bren School website under Master's Projects at the bottom of the Academic Resources for Current Students page: https://bren.ucsb.edu/academic-resources-current-students

C. Student Time Commitment

Students should expect to devote **at least 10-12 hours per week** to their Group Project, although more time can be expected for some tasks. Work on Group Projects should be evenly allocated over the 3.5 quarters to avoid excess workload at the end of the project.

D. Summer Group Project Work

Some students may participate in a summer internship associated with the Group Project. The client may want students in the group to apply for the internship(s) opportunities. In this case, students who are interested in the internship should submit the necessary materials and the client will select the student(s) best suited to the position. The client also may choose to delegate the intern selection to the group. In that case, the students may want to select a student to be the Internship Coordinator (IC). Working together, the students will create a process to select the intern. This should be done early in Spring Quarter so that students who are not selected as the Group Project intern are able to search for other internship opportunities.

The simplest way for a client to support an intern is to pay the intern directly. If a client is not able to pay an intern directly, please contact the Bren School's Finance Manager for further guidance as soon as possible.

Students not involved in a Group Project-related internship may continue some level of work on their projects during the summer, as determined by the group and faculty advisor.

E. Deliverables

The major deliverables for the Group Project are:
- ▶ Work plan
- ▶ Website
- ▶ Faculty Review presentation
- ▶ Final report
- ▶ Project brief
- ▶ Project poster
- ▶ Final presentation
- ▶ Data and metadata

F. Authorship/Ownership

Each member of the group is an equal owner of the intellectual property of the project. Frequently, groups divide the responsibility for some tasks that further the project; one or several individuals may invest more time in one aspect of the project than others. However, each member of the group ultimately contributes to the body of work that emerges from a Group Project. Therefore, **every required paper, poster, presentation, etc., that is produced by the group MUST list every member as an author.**

Groups are encouraged, but not required, to present their Group Project findings in formal conferences outside the university. Participation in such conferences gives students valuable experience and increases the visibility of the Bren School and its students. Groups also may want to publish results in a peer-reviewed journal. Groups may collectively develop criteria for authorship of these supplemental materials (e.g., 2-unit independent study with advisor) but all members of the group must agree to these criteria. A group member may choose not to be included as a co-author on a publication. However, ALL group members must be offered the opportunity to make their own decision about their authorship. Even after the project has ended, if a group member adapts the deliverables for presentation at a meeting or submission to a journal, EVERY group member should be listed as a co-author. Groups also may include faculty advisors or others who contributed substantially to the research as co-authors.

G. Data Distribution

Datasets obtained or derived during your work may be licensed, copyrighted or confidential. Students should NOT make them available to third parties, or generally available online, without authorization from their faculty advisor AND the original source of data. If a group is working with confidential data, a Non-Disclosure Agreement (NDA) will likely be necessary between the client and UCSB. NDAs are developed, approved, and signed by UCSB's Office of Technology and Industry Alliances. Under NO circumstances can a **student** sign an NDA with a client.

H. Publishing

If a group would like to publish its work, group members must discuss this with their advisor. Faculty advisors are experts in peer-reviewed publication, and students should take advantage of their knowledge and experience. Publishing peer-reviewed literature requires interfacing with a larger scholarly community, and this should be done in a way that reflects well on the students, their advisor, the client, and the Bren School. Note that it often takes a prolonged period (months to years) to get a paper published.

I. Use of Human Subjects

Faculty and students who engage in research involving human subjects must obtain prior approval from the UCSB Human Subjects Committee (HSC). "Human Subject" means a living individual about whom an investigator (whether professional or student) conducting research obtains (i) data through intervention or interaction with the individual or (ii) identifiable private information. This means that **if a survey will be conducted, HSC approval MUST be obtained in advance.** Approval is required no matter with whom the group will interact - even friends or family!

If a group will use human subjects, it must review the Office of Research site: https://www.research.ucsb.edu/human-subjects/about. The group must understand and abide by the policies and procedures. The process for obtaining HSC approval for proposed research is not immediate and cannot be addressed at the last minute. There are serious consequences if a group is not in compliance. **Human subjects cannot be interviewed, surveyed, or contacted in any way without prior approval from HSC**.

2. COMPOSITION OF THE GROUP PROJECTS

A. Group Members

Each group is composed of 4 to 5 students. Students vote on projects by assigning preference points. Group assignments are determined by a computer algorithm that uses these points to optimize overall student preferences for different projects. Not all students will be assigned to their preferred project. However, almost all students are assigned to their first or second choice project. The experience of completing a Group Project is generally comparable across groups regardless of the topic of the project.

B. Faculty Advisors

Each Group Project is assigned one or two faculty advisor(s); however, each group must have at least two advisors who are Bren School ladder faculty (or 0% affiliates) on their master's thesis committee. If one ladder faculty is assigned as the advisor, then the students must find at least one other Bren faculty member (or 0% affiliate) who will serve on their external advisory committee. The primary faculty advisor(s) monitors progress and provides technical assistance, expertise, project evaluations, and grades. Bren faculty and other experts on the external advisory committee are expected to review the group's progress at least once per quarter during review meetings but they are not expected to read and give detailed feedback on the group's deliverables (see External Advisors below). Project leadership, management, and the quality of the final products are ultimately the students' responsibilities.

Primary faculty advisors do not serve as project managers; their role is similar to that of a consultant. They are expected to attend regular weekly meetings with the group and are responsible for grading. Advisors may offer reactive advice, responding to activities in the group and providing guidance when asked. The advisors also may give proactive advice regarding deficiencies and deadlines. It is important that students understand the role of the advisors and the limited, though important, role they play in directing the project. Each faculty advisor has his/her own unique approach. Students should expect variability in engagement, expectations, and feedback from one advisor to the next. During the first quarter, each group should clarify the expected level of interaction with their advisors. Groups should include this information in their work plan.

C. Clients

Clients supply the environmental problems (and often relevant data) that are central to Group Projects. Clients may submit Group Project proposals on their own or they may work with students and/or faculty to develop and submit proposals. In the proposal writing phase, students may approach an individual from an outside organization (including a business, government or non-governmental organization, university, etc.) to investigate whether or not the organization would like to serve as a client for a Group Project. Effective clients will be engaged in the project, knowledgeable about its topics, and serve as a resource for students, while not constraining the group's approach or the project's outcome. Some clients may have a clear idea of the problem and what types of solutions are needed. Other clients may be more flexible about the types of solutions needed and they may prefer that students provide direction for how to solve the problem. Students should maintain frequent, professional communication with clients throughout the project. In particular, students must engage the client early in the Spring Quarter of the first year of study, so that all parties clearly understand the project objectives, deliverables and timeline. The clients must be invited to meet together with faculty, external advisors and group members once during Spring Quarter of the first year of study and once during Fall Quarter of the second year of study. If an in-person meeting consisting of the group, faculty advisor, client, and external advisors is not possible, then students should engage the client through teleconference or Zoom. The students should invite the clients to attend the project's Faculty Review and Final Presentation.

D. External Advisors

Interacting and networking with the professional community are critical components of the Group Project process. Groups must obtain the counsel of two or more external advisors, individuals from government agencies, industry, non-governmental organizations, universities, or private citizens who may be interested in the project, its data or deliverables. An external advisor is someone who has knowledge about the project topic and can provide unbiased feedback. If one Bren faculty advisor is assigned to the group, then the group must select another Bren faculty member (or 0% affiliate) for the external advisory committee. However, only one of the two or more external advisors may be drawn from Bren faculty. Each group will be responsible for identifying external advisors and maintaining professional contact with them for the duration of the project. The external advisors must be invited to meet, together with faculty advisors, clients, and group members, once in Spring Quarter of the first year of study and once in Fall Quarter of the second year of study. If an external advisor is not able to attend a meeting in person, the group should engage the person by teleconference or Zoom. External advisors do not need to review the entire final report, although the group may ask for feedback on specific sections if the external advisor has time. External advisors also should be invited by the students to attend the project's Faculty Review and Final Presentation. External advisors are likely busy people and their time should be respected. When scheduling a meeting, the group should be prepared with an agenda and specific questions, so the meeting time is valuable for all parties.

E. Group Project Coordinator

The Group Project Coordinator is a Bren staff member who assists students, faculty advisors, and the Group Project Committee in facilitating the Group Project process. The Group Project Coordinator is Sean Kerr (sean@bren.ucsb.edu). Any questions or concerns regarding a Group Project should be addressed to the Group Project Coordinator.

3. **PROJECT MANAGEMENT**

A. Group Meetings

Groups are encouraged to meet as often as necessary, but all groups must meet at least twice a week at a designated place and time. **Regular group meetings should not be scheduled on Monday through Thursday between 11:00 am – 12:15 pm** as these days and times are reserved for seminars, career talks, faculty meetings, and mandatory academic programs workshops. The primary faculty advisor(s) should participate in one of the weekly meetings. However, it is the responsibility of the students, not the advisor(s), to schedule the meetings and make necessary arrangements. Advance notification of absences to the group is expected as a matter of courtesy. Participation in the group meetings is a portion of each student's grade; missed meetings may negatively affect the overall grade.

B. Scheduling Meeting Rooms

Due to the conditions of the COVID-19 pandemic, room scheduling in Bren Hall is not permitted for the 2020-21 academic year. Thank you for understanding.

Students are responsible for scheduling their own rooms using Google Calendar for regular Group Project meetings. **Three rooms are available to be directly reserved by students using Google Calendar: Bonsai (BH 4327), the Visitors Center (1410), and Manzanita (BH 4329).** Each group should designate a scheduler for the group and this person should be responsible for all calendar entries for their group.

It is imperative that the scheduler check availability before scheduling and never schedule over an existing reservation. In addition, if plans change and the room is not needed as scheduled, the reservation should be removed immediately from Google Calendar since meeting rooms are in high demand.

Google Calendar instructions can be found on the web at: https://bren.zendesk.com/hc/en-us/articles/205802859-Students-Scheduling-rooms-using-Google-Calendar

To schedule a room:
- Click the drop-down arrow next to the "Other Calendars" section on the left side bar in Google Calendar. Click "Browse interesting calendars." Click "more." Click "resources for ucsb.edu." Click the "bren" link, followed by the "bren-rm" link.
- Subscribe to the calendars needed;
- Click on the day and time of the meeting directly on the calendar. Use the 'edit' field to adjust meeting details. Schedule group meetings only if the room is free at the desired time (**if scheduling recurring meetings, please check all dates for potential conflicts**).
- The scheduler MUST include the **group's and scheduler's names** in the title of the meeting so that the Bren scheduling team can easily contact the group in the event of a conflict.

Students may not make reservations on any room calendar other than these 3 designated rooms. If none of the designated student rooms are available, Group Project meetings may be scheduled by Bren staff on behalf of the group in other rooms. Students may request a room by sending an email to scheduling@bren.ucsb.edu. Requests should be made at least 48 hours in advance.

Please also use scheduling@bren.ucsb.edu to reserve a conference phone if needed. A regular phone line can receive only one call at a time; however, conference phones may dial out to two different numbers. Please contact Finance Manager Bridget Mastopietro

(bridget@bren.ucsb.edu) at least 24 hours before your event if you need a Ready Talk account (for two or more parties calling in) or a UCSB authorization code (required for long distance calls).

C. Conflict Resolution

The primary responsibility for intra-group conflict resolution lies with the group members. The faculty advisors should help to resolve any issues that cannot be adequately addressed by the group members. If a group is still unable to resolve a conflict after faculty arbitration, the group may seek assistance from the Group Project Coordinator or the Chair of the Group Project Committee, who will consult with the Group Project Committee if needed. Students may also wish to contact the campus ombuds office (http://www.ombuds.ucsb.edu). Trained mediators are available at no cost throughout the year. Their mediation techniques are informal, confidential, and impartial.

If students have difficulty with a member of their group, it is critical that they maintain written documentation of the problem and attempted solutions. For example, if one member of a group is not doing his/her share of work or not providing timely products or products of adequate quality, the other group members must document dates of specific incidents and what efforts were made to address the problem. Only under these circumstances will it be possible for faculty advisors and administrative personnel to intervene and help craft a solution. Administrative involvement is generally limited and occurs only when there are serious issues that remain unresolved after considerable effort by the students and faculty advisor(s). Because of federal privacy laws, students may not be informed of specific interventions or disciplinary actions taken with other students; however, this does not mean the problem was not acted upon by administration.

4. **PROJECT DELIVERABLES**

Refer to the timeline overview for a summary of Group Project deadlines and deliverables.

Students must pass all ESM 401 courses with a B or better in order to be eligible for the MESM degree. Students must be actively involved with their group throughout the year-long project to receive a passing grade.

A. ESM 401A (Spring Quarter)

MESM students begin Group Projects in Spring Quarter of their first year of study and are required to register for ESM 401A Master's Group Project (4 units) with their assigned faculty advisor(s).

ESM 401A does not have a regular class schedule. Instead, students are required to attend relevant workshops, and schedule two weekly meetings with (1) all group members and (2) all group members and primary faculty advisor(s).

ESM 401A requires completion of the following elements:

1. Scoping of the Project

As part of ESM 401A, each group transforms the project's initial proposal into a tractable work plan. Students should immediately begin investigating the problem presented in the proposal.

Students must schedule regular weekly meetings with their faculty advisor each quarter. Students should strive to meet with their faculty advisor in person, if possible, or by teleconference or email if the faculty advisor is off-campus.

The first in-person meeting with the faculty advisor should be scheduled during the first week of Spring Quarter. The purpose of the first meeting is to discuss the focus of the project, what is feasible to complete within one year and the level of academic performance needed to satisfy the requirements of the MESM program. The group and advisors should read the initial proposal critically prior to the meeting and be prepared to discuss expectations for each other. They should also prepare for a scoping meeting with the client during week 2.

Subsequent weekly meetings with the faculty advisor are intended to provide guidance and feedback as the project develops. Attention should be paid early in Spring Quarter to brainstorming approaches, researching methods, and planning pilot studies. Later meetings in Spring Quarter should involve reporting on methods research and the results and challenges of pilot work. Weekly meetings with the faculty advisor will continue for the duration of the project.

A critical element of a successful Group Project is clear, frequent and open communication with the client. Clients may be involved with their Group Projects to a greater or lesser degree, depending on their availability, expertise and desired level of engagement. Central to deciding what the project will include (and what it will *not* include) is a **scoping meeting** with the group members, client and faculty advisor(s). Students should schedule a meeting with the client during the second week of Spring Quarter. The purpose of the meeting with the client and faculty member is to develop a shared understanding of the project objectives. If any objectives in the original proposal are not feasible, the faculty advisor and students will discuss this with the client and develop an understanding of how the group plans to proceed.

The meeting(s) with the faculty advisor and client should result in a clear agreement about what is possible and not possible given the available time, resources, data, client support, and faculty and student capabilities. Following the meetings, students should document the project objectives and produce a short list of deliverables.

Students, faculty advisors, and the client also should discuss who would be appropriate external advisors. Students are required to engage two or more external advisors for each Group Project. If the group has one primary faculty advisory, then one of the external committee members must be another Bren ladder faculty member (or 0% affiliate). As students develop the work plan, they should consider who they would like to engage as external advisors and invite at least two people to serve in this capacity by week 6 of Spring Quarter.

Students may schedule additional meetings with the faculty advisor and client, as needed and appropriate.

2. Work Plan

The project work plan is a concrete and realistic statement of what the group will do to solve the assigned problem for the client. The construction and articulation of this work plan are significant parts of the work required to solve the problem. The work plan should be limited to **20 single-spaced pages**. This page limit does not include the title page, executive summary, budget and justification, or references cited. A draft of the work plan is submitted to the group's faculty advisor during Spring Quarter (see timeline for date). The revised work plan is due to the faculty advisor(s), client, and external advisors at least one week before the work plan review meeting in Spring Quarter. The final work plan is due to the faculty advisors, client, external advisors and Group Project Coordinator on the last day of Spring Quarter.

The work plan must include the following components:
a. Title page (Appendix III)
b. Executive summary (not to exceed one page)
c. Objectives
d. Significance of the project
e. Background and literature review
f. Data Management Plan
g. Technical approach to solving the problem
h. Deliverables
i. Milestones
j. Management Plan
k. Budget (see Section 6 and examples in Appendix V) and budget justification
l. References cited

Description of work plan components:

(a) Title page (See formatting guidelines in Appendix III)

The title page must include the following information:
- Title (no more than 10 words recommended)
- Names of group participants (alphabetical order recommended)
- Name of faculty advisor(s)
- Bren School of Environmental Science & Management, University of California, Santa Barbara
- Date (month and year of completion i.e., March 2021)

(b) Executive summary

The executive summary of the work plan should be no longer than one page. The executive summary should include background information, objectives, proposed approach, and anticipated results. The executive summary should be text only; do not include graphs or photos.

(c) Objectives

Write a short list of objectives based on the project proposal and the feedback received during meetings between the faculty advisor, client and student group. Typically, students will address one to three objectives for a Group Project. (If a group has more than three objectives, they are probably too specific; it may be appropriate to move this detailed information to the technical approaches to solving the problem). Keep overarching objectives in mind throughout the project and use them continually to monitor whether the group is on track or whether the group needs to re-orient its activities.

(d) Significance of the project

Who is the client and the broader audience, and why do they need to know the answer to the problem?

(e) Background and literature review

Early in the project, the group should find out what is known about the topic that it is addressing. The group needs to locate materials already written about the specific problem and its location or other context, including agency, industry, and consultants' reports, which will often lead to critical datasets and useful scientific literature. The group will also need to search for technical literature (journals, books, electronic resources) describing and explaining the problem and methods for studying it.

The group should resist the temptation to locate a source on the basis of keywords or a title, and then to download it and absorb only enough information to write a sentence about it in a literature review. Storing a PDF file on the computer is not the same as absorbing the content well enough to explain *which* material in the paper is relevant and *usable* for a particular problem. At the same time, a group often cannot afford the time to become as broadly knowledgeable about the subject as an academic researcher. This task of locating relevant, useful information for a single project requires strong focus and balance between obtaining directly useful information and developing a breadth of perspective which can lead to innovation. It is not simply a matter of meeting a quantitative target, such as "refer to *n* articles."

Groups typically start their literature review with keyword searches (e.g. general concepts, species or chemical names, region or environment type) of publication databases such as the Web of Science. Groups unfamiliar with these databases should take advantage of the training in library research techniques provided by **UCSB Research Librarian Kristen LaBonte** (klabonte@ucsb.edu). Each group is encouraged to schedule a meeting with the Research Librarian (separate from the workshop provided) at least once in Spring Quarter to learn more about the available resources that are related to their specific topic.

(f) Data Management Plan

Data and metadata emerging from the project will be archived for public use. The only exception is for data restricted by a Non-Disclosure Agreement. For both public and restricted data, the group's work plan must include a Data Management Plan (DMP). The DMP (1-2 pages) describes how research data will be managed during the project and, if appropriate, made available to others after completion. There are six major topics to discuss in the DMP:

> *i. Describing the research data.* What data are needed? Are such data available? When and how will the data be acquired? Provide a description of the data the group will collect or re-use, including the file types, data set size, number of expected files or sets, content, and source of the data (creator and method of collection).

> *ii. Data standards.* Are there any standard formats in the specific research field for managing or disseminating the data sets that have been identified (e.g., XML, ASCII, CSV, .shp, .gdb, GeoTIFF)? Who from the group will have responsibility for ensuring that data standards are properly applied and data are properly formatted?

> *iii. Metadata.* Metadata is documentation that helps make data sets re-usable. Think about what details (metadata) someone would need in order to be able to understand and use these files. For example, perhaps a readme.txt file is necessary to explain variables, structure of the files, etc. If applicable, describe how the group's model construction, scripts and/or workflows will be documented.

> *iv. Data sharing and access.* The data may have significant value for other researchers beyond this project, and sharing this data is part of the group's responsibility as members of the scientific community. Specify the extent to which data can be reused, including any access limitations. List any proprietary software that might be needed to read the files. If there is data that is not appropriate for sharing due to confidentiality, NDA, or disclosure risk, describe that here.

> *v. Intellectual property and re-use.* If data were collected from the client organization, does the group have the right to redistribute it? If so, are there any

restrictions on redistribution? If the group created its data files, will it assign a Creative Commons license to its data?

vi. Data archiving and preservation. Throughout the project, the group may produce a large number of files. At the end of the project, groups must submit data used in the project (except data protected by non-disclosure agreements) and associated metadata. Not all data need to be saved. If another researcher wanted to replicate the group's work or re-use the group's data, what data and documentation would be required for them to do so? Where will the data and metadata be stored after the project is completed? Is there a subject-specific and/or open-access repository that is appropriate for the data? If students need assistance in evaluating repositories, they should contact **datacuration@library.ucsb.edu**.

(g) Technical approach to solving the problem

Include an overall strategy and the specific tasks necessary to accomplish the objectives. Make a plan for how to obtain the needed data and handle the data when they arrive. While writing this section, ask penetrating questions, such as: How will the data be prepared for analyses? Do some preliminary analysis on the available data. Describe the types of analyses necessary to address the objectives. Use the preliminary analyses to describe the *nature* of the results. Will the results meet the objectives?

(h) Deliverables

There are two types of Group Project deliverables: (1) deliverables for the client and (2) academic deliverables required to complete ESM 401 and to fulfill the requirements of the MESM degree. In this section, list the products that will be created for the client. Also list the academic deliverables including work plan, website, data and metadata, faculty review presentation, final report, project brief, poster and final presentation.

The group should use the list of deliverables to gauge its progress. Some of the deliverables can be produced in the early stages of the project. The group should continually keep the list of deliverables in mind when it is working on the project.

(i) Milestones

Milestones will help students complete their Group Project by identifying key tasks and products that they will create as the project proceeds. In this section, students should <u>list the dates</u> by which they intend to complete each of the tasks outlined in the *Technical Approach*, including data acquisition, analyses, evaluation of results, and product development. Include the dates by which the group intends to complete drafts and final versions of each of its deliverables. At the end of each quarter, students should review and possibly re-organize the remaining milestones.

(j) Management Plan

The Management Plan outlines a group's management structure and general plan for the form and function of the group. It should specifically include:

i. Group structure and management. Each group is required to assign the roles of project manager (PM), data/computing manager (DM), financial manager (FM) and outreach manager (OM). Editor (E) is optional but recommended. If the group has one or more summer internships, the group also may choose to assign an Internship Coordinator (IC). This section should include a description of the duties assigned to each of these roles and who will assume the roles.

This section also should include the names of the faculty advisors, client and at least two external advisors with short descriptions of their roles. The faculty advisor will meet weekly with students; participate in spring and fall review meetings; review and provide feedback on the work plan, faculty review presentation, final report, project brief, poster and final presentation; and assign grades to students for ESM 401A, B, C, and D.

The client and external advisors may be involved with the project to a greater or lesser degree, depending on their availability, expertise and desired level of engagement. Clients and external advisors will participate in spring and fall review meetings. Some clients and external advisors will want to review and provide feedback on a portion or all of the final report or other deliverables. It is the group's responsibility to assess how much involvement is desired and appropriate for clients and external advisors and to provide the opportunities for their engagement (e.g., sufficient time to review materials).

ii. Meeting structure. The students should describe who will schedule the meetings and meeting rooms, notify participants, and take and distribute meeting minutes. It is the group's responsibility to schedule meetings with the faculty advisor, client and external advisors and notify them with sufficient time so they can join the meetings and review background materials.

iii. Guidelines for interacting with faculty advisors, clients, and external advisors. Describe who will be the primary point of contact for the faculty advisor, client and external advisors. Describe how the group will keep its client informed of progress. It is critical that groups always use the highest professional standards in their interactions with faculty advisors, client and external advisors.

iv. Systems to ensure that critical tasks are completed on time. Describe the group's approach to tracking progress and completing milestones on time. How will the group do this? Who will make sure that projects are getting done on time? What is the protocol for addressing late or no submission of interim and final products?

v. Procedures for documenting, cataloging, and archiving information. Documents, contact information, messages, calendars, websites, budget projections, and expenditures must be accessible to all Group Project members. Students should describe their approach to organizing information gathered and generated by the group. If there are delays or failures, the entire project can be adversely affected.

vi. Overall expectations of group members and faculty advisors. Students should discuss with their faculty advisors their own and their advisors' expectations. Document the expectations of the faculty advisor and students regarding faculty involvement and grading criteria.

vii. Conflict resolution process. Some of the tasks undertaken by the group may turn out to be unexpectedly difficult or even impossible. It is important that a group member who encounters such a difficulty communicates the problem to other members promptly and explicitly. The group might then share ideas or seek guidance from the faculty advisor, or re-focus the project if the task is beyond the capacities of the group. Prompt and continuous communication will help the group overcome such difficulties and avoid late surprises or disappointment. Other difficulties can arise because of uneven contributions among the members. This dynamic can lead to feelings of exclusion or that one or more members are not pulling their weight. Describe steps that the group will take if a member does not sufficiently contribute. It is better to decide on ways of dealing with such problems before they arise.

The starting point for managing conflict is for the group to assume initial responsibility for the problem. The group's management plan should first focus on assisting or motivating a group member experiencing difficulty, realizing that problems might arise for anyone. Methods for dealing with problems include peer review and/or division or re-negotiation of responsibilities. If a resolution cannot be reached using these tools within a reasonable time (no longer than a month), the group should engage the faculty advisor or the Group Project Coordinator. If a group member consistently fails to contribute at the expected level, the Project Manager should meet individually with the faculty advisor and/or the Group Project Coordinator to discuss the problem and possible solutions. If a serious problem emerges, Project Managers and other group members should feel free to schedule individual meetings, as needed with their faculty advisor and/or Group Project Coordinator. If it is not possible to resolve the problem with group and faculty advisor intervention, then it may be necessary to schedule a facilitated group meeting with the Assistant Dean or campus ombuds.

(k) Budget and Budget Justification

See Appendix V for a Sample Group Project budget. If the expenses are not standard operating costs, please provide a short justification for why the expenses are critical for the project. If you are unsure of whether expenses are authorized, please consult Bren purchasing procedures and/or contact the Finance team. The group's Financial Manager must meet with the Business Officer prior to hiring any prospective consultants for Group Projects.

(l) References Cited

Include a bibliography of references used to support the group's research. Information derived from other authors must be cited properly. The reference citations should be presented in a standard and consistent format.

3. Work Plan Review

Before the end of Spring Quarter, groups are required to schedule, organize, conduct and document a work plan review meeting. The purpose of the review is to gain critical feedback regarding the project's objectives, scope, and proposed approaches. The most valuable review meeting will be one that elicits strong, detailed suggestions for actions to take or avoid.

The work plan review meeting must include:
   a. All group members
   b. Faculty advisor(s)
   c. Client
   d. Two or more external advisors

Prior to scheduling the meeting, the group and faculty advisor must agree on the attendees, agenda, date, time and location. Groups should schedule their work plan review meeting at a time when their faculty advisor is able to participate in person. If any of the other participants are not able to attend the meeting, the students must engage them via teleconference.

Participants must be notified of the meeting date and time at least 2 weeks in advance. The group must work with the faculty advisor to plan the spring review meeting. However, the group is responsible for making necessary arrangements (e.g., preparing and distributing

the work plan and scheduling the meeting room), and the students will lead the meeting with the faculty advisor as a participant.

Following the work plan review meeting, groups will submit to their faculty advisor a one-page summary of the meeting, paying particular attention to changes that were suggested, and whether they were accepted or rejected by the group. Groups should send written thank you notes to participants in the spring review meeting. The Spring Quarter performance evaluation and grade for ESM 401A will be based in part on how well the students plan, conduct, and document the review meeting. Feedback must be accurately documented so it can be incorporated in the revised final work plan. The final work plan is due to the faculty advisors, client and external advisors by the last day of Spring Quarter.

4. Website

By the end of Spring Quarter, each group is required to create and maintain a public website. The website's URL should be sent to the faculty advisor and Group Project Coordinator by the end of Spring Quarter. The following information must be accessible through this website:
   a. Names and email address for each group member, and a group email address
   b. Faculty Advisor names and emails
   c. Project title and abstract

Once the website is created, the group should continue to update the website. The group's website will remain on the Bren School's website for the duration of the project so it is important to post accurate and complete information.

5. Evaluations

Each student in the group must complete a self and peer evaluation and submit it to the faculty advisor and the Group Project Coordinator by the last day of each quarter. The evaluation requires realistic reflection on the progress and functioning of the group. The primary goal of the evaluations is to inform the faculty advisor and Group Project Coordinator of group dynamics and any problems that may require future intervention. With appropriate justification, self and peer evaluations may impact grade assignments by the faculty advisor. Evaluations are confidential from other group members. This form can be found online at: https://bren.ucsb.edu/academic-resources-current-students

6. Timeline, milestones and assignments for ESM 401A

The table below summarizes the deadlines, milestones, and assignments to be completed as part of ESM 401A. All milestones for ESM 401A are required for all students pursuing Group Projects. In addition to the activities described in the table below, there are specific workshops required for each manager (Financial, Data, Outreach, and Project). Attendance at these workshops is mandatory for the individuals on each group holding the respective role. The schedule of these special workshops will be announced in spring quarter.

Week	Milestones	Assignments
Week 1 March 30-April 3	**Mon, Mar 30** Group Project Kickoff Workshop: A recording of the presentation will be sent to you via This Week at Bren.	• View Kickoff: Learn about support available for Group Projects and how to create your work plan.
	Tues, Mar 31 Client Relations Workshop: A recording of the presentation will be sent to you via This Week at Bren.	• View workshop: Learn how to maintain clear, open and frequent communication with your client. • Maintain strong relationship with your client throughout the project!

	By Fri, Apr 3: Schedule weekly meeting with faculty advisor and *meet in week 1*	• Schedule regular weekly meeting with faculty advisor.
		 • Due to COVID-19, weekly meetings with faculty advisor should be conducted remotely.
		 • Meet with faculty advisor.
		 • Discuss:
		   o Expectations for students
		   o Expectations for faculty advisor
		   o Project objectives
		   o What is feasible to complete within one year
		   o Level of academic performance needed to satisfy requirements of MESM program

	By Fri, Apr 3: Schedule weekly meeting with all students in Group Project and *meet in week 1*	• Get to know the members of your Group Project. Plan something fun to do as a group!
		 • Determine group roles:
		   o Project Manager (PM)
		   o Financial Manager (FM)
		   o Data/Computing Manager (DM)
		   o Outreach Manager (OM)
		   o Internship Coordinator (IC)
		   o Editor (E)
		 • Attend relevant workshops depending on role.
		 • Report alias and PM, FM, DM, OM, IC, E to Group Project Coordinator.

Week	Milestones	Assignments
Week 2 Apr 6-10	Hold scoping meeting with faculty advisor and Group Project client	• Develop a shared understanding of project objectives and deliverables. • Discuss group management structure, and when and how the client would like to engage with the group. • Discuss potential external advisory committee members. • Following the meeting, document project objectives, describe project significance and produce short list of deliverables. • Submit draft of Group Project management plan (Work Plan Section J) to faculty advisor.
	Begin to develop approach to research	• Student and student/advisor meetings focus on approaches, research methods, data sources, and potential pilot analyses.
Weeks 2-6 Apr 6 – May 8	Continue writing workplan; confirm external advisory committee	• By Week 6, invite at least two people to serve as external advisors for the Group Project (one of the two or more external advisors may be another Bren faculty member).
Week 3 Apr 13-17	Refine research approach	• Student and student/advisor meetings refine approaches, research methods, data sources, and potential pilot analyses.

	Apr 17: Project Objectives, Significance, and Deliverables due	• Submit the following to faculty advisor:
		  o Project objectives (Work Plan Section C)
		  o Significance (Work Plan Section D)
		  o Deliverables (Work Plan Section H)

Week 4 Apr 20-24	**Apr 24**: Project Budget and Justification due	• Submit project budget and justification (Work Plan Section K) to faculty advisor.
Weeks 4-6 Apr 20 – May 8	Student and student/advisor meetings focus on research on methods, results and challenges of pilot analyses	• Develop background (Work Plan Section E) • Complete Data Management Plan (Section F) to prepare for data collection. • Draft technical approach (Work Plan Section G). • Link proposed tasks to timeline in milestones (Work Plan Section I).

Week	Milestones	Assignments
	Plan and schedule spring review meeting by Week 6 **May 8:** Draft work plan due	• Discuss with faculty advisor the goals, date, time, and potential participants for the spring review meeting. • Schedule a virtual spring review meeting. • Invite client and external advisors to participate in spring review meeting. • Submit draft work plan to faculty advisor.
Week 7 May 11-15		• Submit draft work plan to faculty advisor. • View Master's Projects Final Presentations for the Class of 2020, this will be held virtually on May 15.
Week 8 May 18-22	**May 18**: Faculty advisor feedback due back to students	• Integrate faculty advisor's feedback into draft work plan before or during week 8.
	May 22: Revised work plan due	• Send revised work plan to faculty advisor, client and external advisors.
Weeks 8-10 May 18 – Jun 5	Host spring work plan review meeting **by June 5.**	• Host work plan review meeting with students, faculty advisor, client and external advisors. • Following meeting, submit one-page summary of proceedings and feedback to faculty advisor. • Following meeting, integrate feedback into final work plan.
Exam Week Jun 8-12	**June 12**: Preliminary Group Project website due	• Submit Bren website link to faculty advisor and Group Project Coordinator.
	June 12: Final work plan due	• Submit final work plan to faculty advisor, client, external review committee and Group Project Coordinator. • Implement work plan in the summer and coming academic year.
	June 12: Self and Peer Evaluations due	• Submit self and peer evaluations to faculty advisor and Group Project Coordinator.

B. ESM 401B (Fall Quarter)

Students must enroll in ESM 401B Master's Group Project for 4 units with their advisor in the Fall Quarter of the second year of study.

Students should meet twice a week in Fall Quarter with (1) all group members and (2) all group members and the faculty advisor(s). In Fall Quarter, students typically work on data analysis and interpretation. Students create figures and charts for their final report and other products. They write an annotated outline of their final report and complete as much of the writing of the final report as possible. Groups must also hold a Fall Quarter progress review meeting.

1. Fall Progress Review Meeting

By the end of the Fall Quarter, each group must hold a progress review meeting. The purpose of the meeting is to report the group's progress to its faculty advisors, client, and external advisors at the mid-point of the project, and to obtain feedback intended to strengthen the group's research. The meeting should be scheduled late enough in the quarter so that some progress has been made, but early enough so that changes can be made without seriously impacting the group's timeline.

The Fall Quarter progress review meeting should cover the following:
   a. Review of project objectives
   b. Research completed
   c. Preliminary results
   d. Timeline for remaining tasks and deliverables

Students must coordinate with their faculty advisors regarding the date, participants, and agenda for the fall progress review meeting. Once a date has been selected, students must reserve a meeting room and invite their client and external advisors. Students should contact the client and external advisors at least 2 weeks before the fall progress review meeting. Students should provide the faculty advisors, client and external advisors with a meeting agenda and any supporting materials.

At the meeting, groups should present a brief review of project objectives. These may evolve over time as the project develops. However, the group must maintain open communication with its faculty advisor(s) and client about these changes and be certain that they agree with any proposed changes. Students should present the current results from their work and discuss their strategy for completing the remaining tasks and deliverables. The focus of the meeting should be to invite the client and external advisors to share their feedback about how the group can solve any problems and complete the project on time.

Following the fall progress review meeting, students should write thank you notes to the client and external advisors and submit to their faculty advisor(s) a summary of the feedback gathered during the meeting.

Groups must complete these deliverables by the end of Fall Quarter to the satisfaction of their faculty advisor. Failure to do so may result in a grade of B- or lower, or I (incomplete) or NG (No Grade) in ESM 401B until the work is completed.

2. Outline for Final Report

At the end of Fall Quarter of the second year of study, each group submits an outline for the final report to its faculty advisor(s). The outline should include:
   a. Revised project objectives
   b. Background and significance (expanded from work plan)
   c. Methods

d. Results
e. Discussion and conclusions
f. References

For each section of the outline, include as much information as completed to date and note the extent to which the section is completed, and/or any remaining obstacles to its completion (e.g., data availability).

As an appendix to the outline, describe the work to be completed during Winter Quarter and a timeline for remaining tasks and deliverables. Keep in mind that the draft background, methods and preliminary results are due to the faculty advisors by the end of the fifth week of Winter Quarter and the complete draft final report is due at the end of the seventh week. Build in sufficient time for the group's editor to review and revise the draft final report so that the various sections are written in a single, professional voice. The *draft* final report should be the group's first *best* effort to present its work!

3. Evaluations

Each individual in the group must complete self and peer evaluations and submit them to their advisor(s) and the Group Project Coordinator by the last day of classes in Fall Quarter. This form is online and can be found at: https://bren.ucsb.edu/academic-resources-current-students

C. ESM 401C (Winter Quarter)

Students must enroll in ESM 401C for 4 units with their faculty advisor during Winter Quarter of their second year. Students shall participate in meetings twice a week in Winter Quarter with (1) all group members and (2) all group members and the faculty advisor(s). The following academic deliverables are due in winter quarter (see timeline for dates):
   a. Draft background, methods and results (Week 5)
   b. Group Project Faculty Review (Weeks 5 and 6)
   c. Complete draft final report (Week 7)
   d. Final report (End of winter quarter)

Groups must complete these deliverables by the end of Winter Quarter to the satisfaction of their faculty advisor. Failure to do so may result in a grade of B- or lower, or I (incomplete) or NG (No Grade) in 401C until the work is completed.

1. Final Report

The final report is a complete discussion of the project's objectives, significance, methodologies, results, and accomplishments. A draft of the background, methods, and results must be submitted to the faculty advisors by the end of Week 5. A complete draft of the final report must be completed by the end of Week 7. The revised final report is due at the end of Winter Quarter (see timeline for dates). The deadline for the final report is firm. If additional time is needed, the group must complete a formal petition including justification for an extension to the deadline.

The final report should reflect the group's ability to articulate in writing the 1) problem, 2) scope of work, 3) analytical approaches, 4) results, 5) recommendations and conclusions, and 6) how the work is related to larger issues. The final report must demonstrate that the group has the ability to create original interpretations of the work of others and/or generate original data that leads to original interpretations.

Conclusions and recommendations in the report are to be based only on 1) original interpretation and synthesis of the work of others; 2) original data and interpretations of

the data; and/or 3) a combination of 1 and 2. The unsupported expression of opinion in the final report is not appropriate.

The final report typically includes the following:

- ▶ Title page
- ▶ Completed signature page
- ▶ Abstract (not to exceed 200 words)
- ▶ Executive summary (not to exceed 4 pages)
- ▶ Table of contents
- ▶ *Project objectives and significance
- ▶ *Background
- ▶ *Methods
- ▶ *Results
- ▶ Discussion
- ▶ Conclusions
- ▶ References

*A draft of project objectives and significance, background, methods and results are due to the faculty advisor at the end of Week 5 of Winter Quarter. A complete draft of the final report is due to the faculty advisor at the end of Week 7 of Winter Quarter. The revised final report is due at the end of Winter Quarter.

The final report should acknowledge any individuals or organizations that have supported the project in any significant way, professionally or financially. Students must obtain permission to include such acknowledgement; supporters have the right not to be publicly associated with the final report.

Adherence to accepted rules of citation is required. Groups should choose a method of citation and use it consistently, i.e. MLA, APA, Chicago, etc. Citations must provide sufficient information for a reader to access the cited work, assuming appropriate permissions (e.g., a journal subscription).

Groups should expect multiple revisions and iterations with their faculty advisor(s) before their report is finalized. It is strongly recommended that one group member serve as the *editor* to review all sections of the final report to make sure the report is presented in a single and professional voice. It is NOT acceptable to submit a draft report that cobbles together several sections created by different group members without at least one group member (the editor) having reviewed all sections to make sure that the style and level of detail are consistent throughout the report.

Students and advisors must discuss and agree upon a realistic timeline and consistent expectations for the review process. Some advisors will expect drafts earlier and may require longer periods for review and comment than others. In general, students should expect that their advisor will require at least one week, but maybe two weeks, to thoroughly review the report. More than one iteration likely will be necessary before the advisors find the report to be acceptable. The project timeline must take into account the required iterations for review and revision of the report and other project deliverables. The group's faculty advisor(s) likely will be the only person/people who read and provide feedback on the complete draft final report. Faculty reviewers at the project's Faculty Review (see below) are not expected to read the draft final report, although some may choose to do so. Some clients and external advisors also may have the interest, time and expertise to review and provide feedback on some or all of the draft final report and/or other deliverables.

Final reports <u>must not exceed 200 pages</u>, and must be free of typographical, formatting, and other errors. All final reports must be formatted in compliance with "Bren School Filing Guidelines" (see Appendix II).

Once approved, each group must provide an electronic copy (PDF format) of the final report, including the completed signature page, to the Group Project Coordinator, faculty advisor(s), client, and external advisors. The final report will be posted to the Bren School website unless an NDA restricts public sharing.

2. Faculty Review

In Weeks 5 and 6 of Winter Quarter (see timeline for dates), each group presents its project for faculty review. By the end of Week 5, groups should have completed their draft of sections on project objectives and significance, background, methods and results, and submitted it to their faculty advisor. The Faculty Review presentation is an opportunity for the students to describe their approach to solving their client's problem and preliminary results. The Faculty Review is a checkpoint in the Group Project process so that students receive feedback from other Bren faculty in addition to their advisors; the primary emphasis is on methodology, technical approaches, and preliminary results. At the time of the review, the project is still underway, and students should integrate feedback from faculty reviewers to the extent possible.

For the Faculty Review, groups will prepare a 20-25 minute presentation. The focus should be on the project's significance, data, methods, and preliminary results. Students also may include any outstanding questions for which they are seeking guidance. Following the presentation, two Bren faculty reviewers will engage students in 15-20 minutes of questions and discussion. It is recommended that no more than two group members present, since speaker transitions are disruptive and generally reduce the effectiveness of the presentation, especially when there is limited time. However, three group members can present if the group works on seamless transitions between the speakers to reduce disruption. <u>All</u> members of the group must be in attendance and will be part of a panel seated in front of the audience. The entire group will participate in answering questions, as appropriate. Every team member must present either the faculty review or public presentation; groups should discuss in advance who will present at these events.

Groups should expect questions and criticism from their reviewers that may result in some revisions to their final reports. Faculty reviewers will likely <u>not</u> have been formally involved in advising the project over the last year and hence can provide a new, fresh perspective. It is <u>not</u> expected that the two faculty reviewers read the draft final report although some may choose to do so. It is the group's responsibility during the faculty review to explain their work to the faculty reviewers and audience. The faculty reviewers provide oral and written feedback to the group summarizing the strengths of the project and/or recommendations for improvement. The Group Project Coordinator will collect and distribute written feedback to the group members and faculty advisor(s).

The entire Bren School community is invited to attend the Master's Project Faculty Review Presentations. The Group Project Coordinator makes all arrangements, including setting the presentation schedule, assigning faculty reviewers, and facilitating presentations and Q&A. Groups should invite their client and external advisors to attend this presentation.

D. ESM 401D (Spring Quarter)

Students must enroll in ESM 401D for 2 units with their faculty advisor in Spring Quarter of the second year of study. Students shall participate in meetings twice a week for the first 4 weeks of Spring Quarter with (1) all group members and (2) all group members and the

faculty advisor. The following academic deliverables are due in Spring Quarter (see timeline for dates):
   a. Project brief
   b. Project poster
   c. Final presentation
   d. Website (revised and archived)
   e. Data and metadata

At the end of the fourth week of Spring Quarter (April 23, 2021), the Bren School hosts a special public event featuring presentations of the Group and Eco-E projects. The School invites academics from other UCSB departments and other universities, environmental professionals, Corporate Partners and other Bren affiliates, in addition to the entire Bren community and public at large. Groups should personally invite their clients, external advisors, and other professionals with whom they interacted over the course of their project. Students may also extend invitations to personal guests.

1. Project Brief

The project brief is a concise summary of the group's work, accessible to an intelligent general audience. The project brief should convey the importance of the Group Project, the problem tackled, and the solutions recommended. The project briefs are likely to be the most widely read product from the Group Project. Therefore, the brief should be polished, eye-catching, self-supporting (i.e., doesn't require referring to the full report), substantive, technically impressive, and easy to read at multiple levels (a skim, a casual read, a careful read).

The project brief should impress most readers with the group's accomplishments and give the readers a better understanding of the problem and its solution; some readers will then be motivated to read the full report. The brief should convey what the Group Project entailed as well as the significance and accomplishment of the group's activities.

In composing a brief, convey the main points of the Group Project:
   ► Environmental problem
   ► Significance
   ► Project objectives
   ► Background
   ► Approach
   ► Results
   ► Conclusions
   ► Acknowledgments

In the project brief, communicate the problem, its importance, and the results. Use a combination of figures, tables, graphics and text boxes to summarize the main points and engage a reader. Organize the information with headers, captions, and other signposts. Reiterate the main points in the conclusion, providing context and significance. Use of color is appropriate for a policy brief. However, the brief should be designed to be legible if photocopied in black and white.

Each group must prepare a four-page project brief by early Spring Quarter. Briefs should be prepared using the template on the web at https://bren.ucsb.edu/academic-resources-current-students
as a guide. Students may alter the template for the brief, but it must include the Bren logo, Bren School of Environmental Science & Management, UCSB, Group Project members, faculty advisor, client names, and academic quarter (i.e. Spring 2021) in a clear and easy-to-read format.

Use single-spacing for the body of the text. Use 11 point Garamond type (or comparable font), columns with 0.75-inch margins, flush left and right, and 0.5 inch between columns. Section headings should be in larger type. References and footnotes should be no smaller than 10-point font and occur at the end of the brief. For references and footnotes, use the style found in Science Magazine.

A draft of the project brief must be submitted to the faculty advisor(s) by the second Friday in Spring Quarter (see timeline for dates). The faculty advisor(s) should provide prompt feedback on the project brief. Students should integrate the feedback and submit an electronic (PDF) copy of the final project brief to the faculty advisor(s) and Group Project Coordinator by the end of the third week of Spring Quarter.

Groups should make enough (at least 100) hard copies of their project brief for distribution at the Master's Project Final Presentation event. This event typically attracts approximately 400 people. Print the brief on tabloid paper (11 inches x 17 inches) so it does not need to be stapled. Inform the printer of the page order for printing on this type of paper. Groups also should upload the final project brief to their Group Project website.

2. Project Poster

Each group must prepare a professional poster that summarizes the Group Project. The poster is a visual way to communicate the project objectives, significance and results.

Students should create unique poster designs, but every poster must include the project title, names of all Group Project members and faculty advisor at the top of the poster, and the Bren logo, "Bren School of Environmental Science & Management, University of California, Santa Barbara," and the event date. Groups may include their client's logo (if approved by the client) and name (in acknowledgements).

Similar to the project brief, the poster should include the following information:
- Environmental problem
- Significance
- Project objectives
- Background
- Approach
- Results
- Conclusions
- Acknowledgments

Information regarding Group Project posters is available on the Bren School website at:
https://bren.ucsb.edu/academic-resources-current-students
The poster should be at least 48 inches by 36 inches (but no larger than 72 inches by 48 inches) including borders and must be laminated so that it may be preserved for future use.

A draft of the project poster must be submitted to the faculty advisors by the second Friday in Spring Quarter (see timeline for dates). The faculty advisor(s) shall provide prompt feedback on the poster. Students should integrate the feedback and submit an electronic (PDF) copy of the final project poster to the faculty advisor(s) and Group Project Coordinator by the end of the third week of Spring Quarter. Groups should also upload the final project poster to their Group Project website.

Students should contact a poster printer several weeks before the poster will be printed. The Bren School has an agreement with PIP (www.pipsantabarbara.com) so that posters may be directly paid by purchase order. If you would like to use PIP, please contact the Purchasing Coordinator to request a purchase order. You also may select another printer and request reimbursement for poster printing expenses.

Ask the printer what format they can print, how large the poster can be, and what resolution (dpi or ppi) is needed for any photos or other graphics. Tell the printer when the digital file will be provided and when the poster must be picked up. Posters should be printed no later than the Monday of the fourth week of Spring Quarter so that any mistakes can be corrected. Posters must be laminated or otherwise coated for durability. Please do not print on vinyl material; the weight is too heavy and it will 'sink' in the poster display cases.

The project posters will be displayed at the Master's Project Final Presentation event on Friday of the fourth week of Spring Quarter. The Group Project Coordinator will collect all posters after the poster session. The posters will be displayed in the hallway of the third floor lab wing of Bren Hall for the subsequent year.

3. Final Presentation

Master's Project Final Presentations celebrate the completion of innovative, leading edge research and offer Bren MESM students the opportunity to share their work with faculty, peers, potential employers, members of the community, family and friends. The Final Presentation should focus on the project findings and their significance. Final Presentations contribute to the reputation and prestige of the Bren School and, hence, the value of the students' degrees. All 2nd year MESM students are required to participate in the final presentations. Participants are advised to dress in business attire.

Each group has 35 minutes, which includes 20-25 minutes for the presentation and 10-15 minutes for questions. It is recommended that no more than two group members present, since speaker transitions are disruptive and generally reduce the effectiveness of the presentation, especially when there is limited time. However, three group members can present if the group works on seamless transitions between the speakers to reduce disruption. All members of the group must be in attendance and will be part of a panel seated in front of the audience. The entire group will participate in answering questions.

The audience at the Final Presentations is different than the audience at Faculty Reviews. The Final Presentations need to be understandable to a diverse group (employers, experts, non-experts, family, and friends, etc.). This does not mean that it is necessary to "dumb down" the presentation. However, students should prepare a presentation for an audience that is more interested in substance and findings and less interested in, for example, analytical methods or data management.

Groups will have a videotaped practice session in advance of the Final Presentation.

Each project has one page in the Master's Project Final Presentations program. An abstract, along with the project title, group members, advisor(s), and acknowledgements must be sent electronically to the Group Project Coordinator the end of Winter Quarter (see timeline for date).

4. Website

The group should continue to update their website during the project. By the end of the project, the website should describe the project objectives and outcomes, in addition to names of group members, advisor(s), external advisors and client.

5. Data and metadata

At the end of the project, data used in the project and associated metadata must be archived through the Bren School. The Data Manager must submit the organized data and

metadata to **datacuration@library.ucsb.edu** with a copy to the faculty advisor and Group Project Coordinator**.** As described earlier, data used in a Group Project may have significant value for other researchers and sharing the data is the responsibility of the group. Data protected by non-disclosure agreements (NDAs) are exempted from this requirement. Throughout the project, the Data Manager should organize the data and create metadata so, after the project is completed, another user may access and utilize the data. The Data Management Plan included in the work plan sets forth the guidelines for data management and archiving. For assistance with preparing data for archiving, please contact datacuration@library.ucsb.edu.

5. **PROJECT EVALUATION**

A. Faculty Evaluation of Students

Each student in the group will receive a separate grade for each quarter of the project (ESM 401A, B, C, D). If a group performs well together, it is likely that all group members will receive the same grade, but this is not guaranteed.

Student performance in a Group Project is evaluated and graded based on demonstrated depth of understanding, critical thinking, interdisciplinary approach, originality, external development, resourcefulness, professionalism, and communication skills. Specific criteria that faculty advisors will use in assigning project grades include:

1. A working understanding of the published literature and facts immediately relevant to the project. A literature review should be largely completed by the end of Spring Quarter of the first year.

2. A critical perspective on the quality and shortcomings of prior work relevant to the project. This should include an identification of attempts to answer similar questions in other contexts. This critical review should be at least 50% completed by the end of Spring Quarter of the first year and fully demonstrated by the fall progress review.

3. Knowledge and synthesis. A working understanding of the social and natural science dimensions of the issues and an aggressive plan for integration of these dual perspectives into the project. This should be demonstrated at a level of 75% by the end of Spring Quarter of the first year and 100% by the beginning of Winter Quarter of the second year.

4. Originality. Originality of analysis, problem formulation, and scope of work. This should be demonstrated throughout the project.

5. Professional relationships. Formation of working relationships with environmental professionals outside of the Bren School. In some cases, external advisors may be identified when the Group Project is proposed. In other cases, the students may have to identify external advisors who can benefit the Group Project. This should be completed by the middle of Spring Quarter of the first year of study.

   Group members shall demonstrate the highest level of professionalism and respect in their dealings with each other, their faculty advisor, client, external advisors and other stakeholders.

6. Resourcefulness. Throughout the project, students shall demonstrate initiative in finding information, identifying tools necessary to achieve the scope of their project, seeking outside advisors, acquiring necessary funding, and establishing internships for themselves as appropriate.

7. Punctuality. Students shall attend all group meetings on time and ready to engage with their team. They must deliver intermediate and final products on schedule, both to meet Bren School deadlines as well as intra-group deadlines established by the Project Manager.

8. Knowledge and analytical thinking. Students shall gain knowledge about the problem, conduct a rigorous scientific analysis and produce well-reasoned conclusions and recommendations.

9. Communication skills. Oral presentations and written reports shall be well-organized, scholarly, and well-communicated. Each group member must co-present the work orally, either at the Faculty Review or Public Presentation, and be present and participate in both events.

   All group members, particularly Project Managers, are expected to communicate concerns and issues with each other and their faculty advisor in a timely manner.

10. Participation. Students shall participate and actively contribute in meetings, training sessions, and events.

B. Student Evaluations of Faculty Advisors

At the end of the project, all Group Project members should complete an evaluation for their faculty advisor(s) and submit it to the Group Project Coordinator (see Appendix I). The Group Project Coordinator compiles all comments for anonymity and provides them to faculty only after the final grade for ESM 401D is issued.

In the event that there are any serious advising problems mid-way through the project, this should be brought to the attention of the Group Project Coordinator or the Assistant Dean for Academic Programs. These staff understand and are committed to respecting privacy and anonymity in working with students to try to find solutions to problems.

6. **CREATING A PROJECT BUDGET**

Each Group Project is allotted $1,300 as a base budget, and up to an additional $200 of printing on Bren School printers. The Financial Manager (FM) for each group must attend a meeting with the Bren School's Finance Team in spring of the first year of study in order to activate the group's account.

Each group must create a budget for its project, estimating expenses to the best of its ability and accounting for the following costs:
   a. Phone calls
   b. Final poster (laminated)
   c. Project brief
   d. Printed copy of final report (if requested by faculty advisor or client)

In addition to the above costs, each group must consider appropriate additional expenses such as travel, software, datasets, laboratory fees, business cards, reference books, presentation materials, photocopying, and publication expenses when preparing the budget. The budget is for reasonable expenses related to the Group Project.

Bren School Purchasing Procedures: https://bren.ucsb.edu/purchasing

Please note: There are numerous restrictions to use of Group Project funds provided by the Bren School. **These funds cannot be used (*see exception below) to pay for gifts, awards, or**

donations. There are strict eligibility requirements related to hiring. The group's Financial Manager must discuss all potential hires with the Bren School's Business Officer <u>before</u> proceeding with the hire. Restrictions related to use of funds for food and beverages are as follows:

- Funds may <u>only</u> be used for food and beverages associated with entertainment/business meetings if (1) <u>prior</u> approval is obtained from the Bren School's Business Officer; and (2) the entertainment is associated with a meeting that includes other people who are <u>not from the University</u> (i.e. client, external advisor). **The funds <u>cannot</u> be used to provide food and beverages for meetings that include only UC personnel and/or students**. There are NO exceptions to this UC policy.
- Funds may only be used for food and beverages related to travel if the travel conforms to UC travel policies (https://bren.ucsb.edu/travel).

*Under special circumstances, the group can request an exception to policy for expenditure for a gift. However, request for exception to the policy must be made to the Bren School's Business Officer in advance of the expenditure and approval is not guaranteed.

Bren School Financial Unit

- The Bren School's Business Officer is the primary contact for budget matters related to Group Projects. The Business Officer is Kim Fugate (finance@bren.ucsb.edu; kim@bren.ucsb.edu); Bren Hall 2516; 805-893-3540.

- The Bren School's Financial Manager assists with budget matters related to Group Projects. The Financial Manager is Bridget Mastopietro (finance@bren.ucsb.edu; bridget@bren.ucsb.edu); Bren Hall 2514; 805-893-7457.

- The Bren School's Personnel/Payroll & Travel Coordinator processes paperwork related to travel associated with Group Projects. The Personnel/Payroll & Travel Coordinator Onella Gayraud may be reached at travel@bren.ucsb.edu; Bren Hall 2522; 805-893-6114.

- The Bren School's Purchasing Coordinator processes purchase orders and reimbursements for items associated with Group Projects. The Purchasing Coordinator is Jewels Bolden (purchasing@bren.ucsb.edu; jewels@bren.ucsb.edu); Bren Hall 3524; 805-893-4172

- The Bren School's Travel unit processes parking permit requests and paperwork related to domestic travel. The Travel unit may be reached at travel@bren.ucsb.edu; Bren Hall 2400A; 805-893-8452.

Group Project Financial Managers

Each group must designate one person to serve as the group's Financial Manager (FM). The list of student Financial Managers will be provided to the Bren School's Finance Team and an informational/training meeting for student Financial Managers will be scheduled to discuss policies and procedures.

A.   Project Codes

Each Group Project is assigned a unique Project Code. A Project Code is an account number in the School's internal accounting system designated to track expenses. Each Project Code number looks something like "GP087." Group members must use this Project Code to

identify charges [Purchase Orders (PO), faxes, phone calls, petty cash receipts, lab fees, etc.] for appropriate allocation and/or reimbursement.

B.   Expense Tracking

The student Financial Manager will receive login information for GUS, the school's internal accounting system used to track expenses. Students may log into GUS at any time to check their group's budgetary activity. The student Financial Manager will be responsible for tracking, managing, communicating about, and updating the group's budget. If expenses (phone, copies, travel, etc.) exceed the budgeted amount or do not conform to University policy, reimbursement requests will be returned and the group members will be responsible for funding the activity. Please note: there may be a slight delay from the time a group makes a purchase or submits a reimbursement request to when it is posted in GUS. It is important for the student Financial Manager to independently record and track all expenses for the group to avoid exceeding the project budget. Students are responsible for paying expenses above the project budget or not in compliance with UCSB and Bren School policies.

C.   Printing

Each group receives up to $200 of printing on *Bren Hall* printers. These funds CANNOT be used for the printing of final posters or briefs; they are for use on Bren Hall printers only. These funds must be transferred to the individual printing accounts of Group Project members. If groups require more than $200 of Bren printing, then groups must request a transfer of some of their project funds to printing accounts. If there are not adequate funds remaining and groups require more printing, they will have to pay for it themselves and the charge will be billed to students' BARC accounts.

D.   Copying

Bren copiers are for staff and faculty use only. Copying may be done at Davidson Library or the University Center.

E.   Phone Authorization Code

Each Group Project receives a 5-digit phone authorization code, which allows members to make phone calls from any Bren Hall meeting room with an outside phone line. The telephones in the administrative offices are not available for student use. All phone expenses are automatically allocated to each group's Project Code.

F.   Instructions for making Group Project phone calls:
- Pick up the phone handset
- Dial #55. Wait for the confirmation tone.
- Dial the 5-digit phone authorization code. Wait to hear a dial tone.
- Dial 9 (to get outside dial tone), followed by the phone number.
- If there is an interrupted or "stutter" dial tone, reenter the Authorization Code.

G.   Teleconferencing

The Bren School has several speaker phones which can be reserved and checked out for conference calling. These phones, along with a specific meeting room that has as an outside phone line, can be scheduled by contacting scheduling@bren.ucsb.edu. When dialing the number, please use the phone call instructions above to ensure the call will be charged to the appropriate group account. Incoming phone calls to the specific phone line will not be charged to the group. A regular phone line can receive only one call at a time; however,

conference phones may dial out to two different numbers. Please contact Finance Manager Bridget Mastopietro (bridget@bren.ucsb.edu) at least 24 hours before your event if you need a Ready Talk account (for two or more parties calling in) or a UCSB authorization code (required for long distance calls). Other options for conference calling include Skype or Zoom.

H.   Visitor Parking Permits

Parking permits may be purchased for clients, external advisors, etc. for parking on the UCSB campus to attend Group Project meetings. To obtain a permit, contact Corina Aguiar (corina@bren.ucsb.edu) **at least 48 hours before** your visitor's arrival, and provide the: 1) name of the Group Project; 2) Group Project Code; 3) name of the visitor and his/her affiliation; 4) date and time of arrival; and 5) location of the meeting (building and room number). Each permit costs $10/day and is charged to the Group Project budget. Reserved parking (where a parking spot is designated for the visitor near Bren Hall) is more expensive ($30/day) and should be used only when the visitor is an extremely important individual with a time constraint.

I.   Purchasing

All purchasing must be processed through the Bren School Purchasing Coordinator. The preferred purchasing method is to email purchasing requests, the project team name, and project code to purchasing@bren.ucsb.edu so the Purchasing Coordinator can place the order. Another method of purchasing is to use personal funds to purchase the item and then submit a reimbursement request. Original receipt(s) are required for all expense claims. Student Financial Managers should understand purchasing policies and procedures (https://bren.ucsb.edu/purchasing) and ensure that their group abides by these rules. ***Please note:* Any non-consumable items purchased by the group with project funds are the property of the Bren School and must be returned to the school at the close of the project (e.g. an external hard drive). Purchase of clothing for Master's Project Final Presentations, or other project-related activity is not allowed.**

J.   Reimbursement

If a vendor does not accept a purchase order, group members may use personal funds and then submit a receipt to the Purchasing Coordinator to be reimbursed. When submitting receipts for reimbursement, please complete a Miscellaneous Reimbursement Form, found on the Bren website here: https://bren.ucsb.edu/purchasing, and include the following:

- Original receipt with name of vendor, date, and description of what was purchased
- Name of person to be reimbursed
- Original signature

Groups have access to their Group Project funding until the last day of Spring Quarter of the second year of study. In some instances, access can be temporarily extended with advance approval from the Business Officer.

K.   Travel

All travel must be processed through the Bren School Financial Office. Student Financial Managers should familiarize themselves with the Bren School Travel Regulations. Questions regarding travel should be sent to travel@bren.ucsb.edu. All travel reimbursement claims must be submitted to the Bren School Travel Coordinator no later than 30 days upon completion of travel to allow time for internal processing, and transfer to the UCSB Central

Accounting Office in time for the 45-day UCSB processing deadline. More information on travel can be found on the Bren website here:
https://bren.ucsb.edu/travel

L.   Outside Funding

Most Group Projects do not require outside funding and are able to fully complete the scope of work within the budget provided by the Bren School. In some cases, a project's scope of work, required travel, or materials exceed the Bren School budget and additional costs must be funded by the client. When this is the case, costs must be estimated and the client must acknowledge that they are able and willing to pay up to the amount that has been estimated. This must be established in the initial Group Project proposal. If a client does not pre-approve the budget, it is unlikely a project with additional costs will be selected.

Gifts

In limited circumstances a client or other external funding source may wish to make a contribution to support a Group Project. In this case, please contact the Bren School's Assistant Dean for Development, Lotus Vermeer, lvermeer@bren.ucsb.edu. It is imperative that individuals and organizations are NOT solicited for gifts. **Active fundraising by students without guidance from the Assistant Dean for Development is NOT appropriate.** Any discussion about potential gifts to the Bren School should be directed to the Assistant Dean for Development. A gift cannot have deliverables of any kind. If there are deliverables, or if there is paperwork to be signed, it is highly unlikely that it is a **gift**. No Bren student or faculty member has the authority to sign paperwork related to acceptance of money.

If a gift is received to support a particular Group Project, then a special Project Code will be created for the group to access these funds. If there are funds remaining at the end of the project, they will return to the Bren School general fund.

Keep in mind that federal agencies, other governmental agencies and many non-governmental organizations cannot give money in the form of a gift. In this case, any funds contributed toward Group Projects should either be managed by the agency or organization (strongly recommended) or directed to UCSB as a contract or grant.

Grants/Contracts

A contract or grant is used when money is given to the University for a specific deliverable(s). Given the complexities of submitting proposals for contract and grant funding, the length of time it tends to take to process proposals and ultimately receive funds, and the high overhead rate, it is far better if the Bren School receives funding to support Group Projects in the form of a gift or, better yet, if the client manages the funds directly. Please note that grants and contracts are required to provide for indirect (overhead) costs, which are 55% of the award, to be paid to the university; gifts are assessed 6% overhead. If a Group Project client or external advisor would like to provide a grant or contract to the school, please direct them to the Business Officer. No Bren student or faculty member has the authority to sign agreements related to acceptance of money.

7. **COMPUTER RESOURCES**

The following describes computer resources available to each Group Project and recommended management practices. Most of these suggestions do not require any special privileges; those that require the involvement of the Bren School Compute Team are clearly noted.

A. Data Manager and Outreach Manager

Each group should designate a Data Manager (DM) who will have primary responsibility for maintaining the group's shared online information and adhering to the group's Data Management Plan. Designating a single Data Manager ensures that a group's information is consistent by allowing only the manager to modify it (except as specifically described below). The Data Manager should also be responsible for briefing group members on the use of directory and file permissions and managing information within the group's information architecture. The Data Manager will be authorized to install software on the group's computer.

Each group should also designate an Outreach Manager (OM). The Outreach Manager will have primary responsibility for developing and maintaining the group's website (see section 7J for more information). The Outreach Manager also will manage public communications, such as educational materials about the project, a public blog, etc., on behalf of the group and be responsible for presenting at a Flash Talk presentation to provide a public update on the group's progress during the beginning of Fall Quarter.

B. Project Alias

Each group chooses a short alias (less than 20 characters) for their project. The alias is used to label the project's online artifacts (directories, mailing lists, etc.) and identify the project in shorthand. The alias should be professional and should reflect some aspect of the group's research topic.

C. Group Email List

Each group will be added to an email list for their project; the email is gp-alias@bren.ucsb.edu. This will be used as a contact email for the entire group and is accessible to Bren staff and outside parties. Groups can also make an internal list for only group members and/or their advisor as necessary. Directions for setting up a Google Group are located here: https://bren.zendesk.com/hc/en-us/articles/115002102646-How-do-I-get-an-email-list-for-my-group-project

D. Shared Directory

The Bren School Compute Team will create a directory on the shared drive for each Group Project. The shared directory will be named "**[alias]**," and will be housed on a Bren School Windows server (Babylon). This shared directory will be accessible from all Windows systems in the ESM domain via \\babylon\GroupProjects2021GPSHARE. For Group Project members, this will be mapped to G:\. The pathname **"gpshare"** in the remainder of this document refers to this shared directory.

E. Group Access Permissions

The Bren School Compute Team will create a Windows group for each Group Project, named "**[alias]**." The members of these Windows groups will be the student members of each group and their faculty advisor(s). Unless otherwise specified, all files and directories discussed in these guidelines will be owned by the group's Data Manager. The Data Manager should assign, read, and execute permissions to the members of the group. The Data Manager and all group members are responsible for ensuring that the Windows group "ESM – System Admins" have "full control" permissions on all directories within the Group Project's directory structure that the group wishes to be backed up. Without appropriate permission, regular backups of a group's electronic files will not occur, and lost files will not

be recoverable. Students can access the permissions for a folder or files by right-clicking on it -> Properties -> Security.

F. Working Documents (Recommended)

Each group's Data Manager may create a group-writeable directory GPSHARE\workdocs, under which each project member may create their own subdirectory GPSHARE\workdocs\member. These subdirectories should be readable by a group's Windows group, but writeable only by the owner and the Data Manager. The protocol for collaborating on a document is as follows: Each collaboratively authored document should be assigned a lead author who is responsible for maintaining the master copy. Each collaborator should be free to place components or edited versions in their own GPSHARE\workdocs\member\document subdirectory, where the document has a unique name, assigned by the document's lead author. It should be the lead author's responsibility to synthesize the final version of the document for submission to the Data Manager to post for the group members to read.

G. Library (Recommended)

Each group's Data Manager may create a group-writeable directory GPSHARE\library, in which group members can place static (i.e. read-only) documents for the project to share. Group members should give the Data Manager their files that they would like to house in the Library. This directory should be "read only" for all group members with the exception of the Data Manager.

H. Calendar (Optional)

Each group's Data Manager and/or other specified group members may maintain a project calendar for project events and deadlines, Google Calendar, etc. Each student has an individual Google Calendar account, which can be used to propose Group Project meetings, etc. Please remember that when using individual accounts, only the person proposing the meeting may make changes to the meeting. Therefore, one person should be selected to schedule meetings. For more Google Calendar information, visit: https://bren.zendesk.com/hc/en-us/sections/201311245-Google-Calendar

I. References (Optional)

Each group's Data Manager may maintain a shared file of bibliographic references that will be incorporated into project reports, papers, etc. The Bren School currently supports EndNote bibliographic software, which can be installed upon request on a Group Project computer. Some groups choose to use an online citation manager; basic accounts are often free.

J. Public Website

Each group is required to create a public website. Students may select the program in which to design the website (e.g., Weebly, Wix, Dreamweaver, etc.). A web design workshop for Outreach Managers will be offered in the Spring Quarter of the first year of study to provide instruction on website design, if needed.

The Outreach Manager is responsible for attending training workshops, designing and maintaining the group's website, and posting information in a timely manner. The Outreach Manager must verify all links on the group's web pages when editing or adding information to them. In the Spring Quarter of the 2nd year of study, the Outreach Manager must conduct an assessment of their site and complete revisions as appropriate.

Functioning website links must be sent to the Group Project Coordinator by the end of Spring Quarter of the first year of study (see timeline for date).

Appendix I

<u>**Evaluations**</u>

Peer & Self Evaluation:
Peer & Self Evaluations (completed quarterly) are available online:
https://bren.ucsb.edu/academic-resources-current-students

Faculty Evaluation:
The faculty evaluation will be submitted via Survey Monkey. The Group Project Coordinator will send a link to the survey in the second half of Spring Quarter of the second year of study. Survey results will be kept anonymous, compiled in summary format, sent to advisors and recorded in personnel files.

Appendix II

<u>Formatting & Filing Requirements for MESM Group Project Final Reports</u>

Responsibility for the content of the Final Report
The group members and faculty advisor(s) are responsible for the content of the final report. The faculty advisor must review the entire draft report before giving final approval. This review includes:

- All preliminary pages or front matter (e.g., preface, dedication, acknowledgements, etc.)
- The main body of the report (including figures, charts or other inserted matter)
- The back matter (e.g., notes and bibliography, appendices, etc.)

In general, no changes may be made to the final report after the faculty advisors have signed the approval page. If changes are necessary after the faculty advisor has approved the report, the group must have their advisor sign a new approval page.

The organization, presentation, and documentation of each Group Project must meet the standards set by the faculty advisors and the Bren School. For general information, students may consult a standard style guide; The <u>University of Chicago Manual of Style</u> is recommended as an authoritative source. Students who have discipline-specific questions should consult their faculty advisor(s).

Group Project title and signature page requirements

<u>Title page requirements</u>
Each Group Project final report must include a title page with the following information:

- Title of the Group Project
- "Master of Environmental Science and Management" as the students' degree objective
- Bren School of Environmental Science & Management, University of California, Santa Barbara
- Names of group participants (alphabetical order recommended) and faculty advisor
- Month and year the project is signed by the faculty advisor(s)

Bren staff will link each Group Project on the Bren School website by graduating year with the authors of each project listed alphabetically.

<u>Signature page requirements</u>
The format of the signature page is displayed in Appendix IV. The signature page should be placed immediately following the title page. The signature page should <u>not</u> be numbered but should be counted toward subsequent numbering.

Due to concerns over privacy and because Group Project final reports will be posted to the Bren website, students may include an <u>unsigned</u> signature page in the .pdf of their final report. The unsigned signature page must include the typed names of students, in alphabetical order, followed by a section with names of faculty advisors, also in alphabetical order. "This Group Project is approved by:" must appear immediately above the faculty advisor(s)' names. The approval page must contain the month and year the project is signed by the faculty advisor(s).

Group Project faculty advisors and project members must <u>sign</u> the original printed copy of the signature page, whether or not the signed page is included in the final report. All signatures must be in black or blue ink; no other color ink is acceptable. The typed name of the person signing must appear immediately to the right of or below the signature.

The signed signature page, rather than a blank, may be scanned and displayed in the final report, immediately following the title page, but signatures will be redacted from the version posted online

Standards for Group Project titles
The Group Project title should use specific, unambiguous, descriptive words that will ensure electronic retrieval. Do not use formulae, symbols, superscripts, Greek letters, or other non-alphabetical symbols in the title. Group Project titles should represent a summary of the research and not be lengthy. Titles that contain more than 10 words are considered wordy. Subtitles should be used only when absolutely necessary.

<u>Dates on title and signature pages</u>
The approval/signature page and the title page must have the month and year the project is signed by the faculty advisor(s).

<u>Table of Contents</u>
A table of contents is required. The table of contents should include the major chapters, subchapters, and figures and tables.

Other preliminary pages, such as those for acknowledgements or list of figures and charts, are optional.

<u>Abstract</u>
An abstract is required. It should provide a brief synopsis of the research and be succinct (200 words). The abstract should be placed following the table of contents and any optional preliminary pages (i.e., acknowledgements).

The table of contents, other preliminary pages, and abstract must meet all formatting requirements delineated below. All preliminary pages, with the exception of the title page and approval (signature) pages, must be numbered with lower case Roman numerals beginning with Roman numeral iii; see below for additional information on pagination and placement of page numbers.

<u>Key Words</u>
Select up to **10 key words** to describe the project

<u>Executive Summary</u>
The executive summary has more detail than the abstract and should be no longer than four pages. Since most people will read the summary rather than the entire report, it should include, at a minimum, background information and recommendations. **The executive summary should be text only; do not include graphs or photos.**

<u>Legibility and appearance</u>
The final report must be produced using a font that is highly legible and dark enough that it can be reprinted clearly.

<u>Dimensions</u>
The final report must be formatted to letter-size (8.5 x 11 inches).

<u>Margins</u>

The following are minimum margin dimensions. The group may set larger margins but must be sure that the final text is well within these guidelines.

LEFT = 1.25 inches (this margin is wide for binding requirements)
TOP = 1 inch from top of paper
RIGHT = 1 inch
BOTTOM = 1 inch from bottom of paper

Aside from page numbers, nothing must intrude into the margins. These minimum specifications also apply to all figures, charts, graphs, illustrations and appendices. When oversize pages are used, the same margin measurements must be maintained.

Page Numbers
Page numbers should be centered on the page 0.75 inches from the bottom of the edge of the page. Placement of page numbers must be consistent throughout the final report. Provide space between the text and the page numbers.

Pagination
Every page must be numbered consecutively. Except where noted below, each page of the entire final report must be numbered in accord with the following standards:

Neither the title page nor the approval (signature) page is to be numbered; however, these two pages are counted when numbering the following preliminary pages even though they are not numbered.

The preliminary pages following the title and approval pages must be numbered sequentially beginning with lower case Roman numeral "iii." All preliminary pages are to be numbered using lower case Roman numerals (iii, iv, v, vi, etc.). This includes dedications; table of contents; lists of figures, tables, symbols, illustrations, and photographs; prefaces; acknowledgments; and abstract.

The main body of the text and any back matter must be consecutively numbered with Arabic numerals (1, 2, 3, etc.), including text, illustrative materials, bibliography, notes, and appendices.

Correct pagination is required for the final report to be acceptable: no missing pages, blank pages, or duplicate numbers or pages.

Line Spacing
The final report should be single spaced with double spacing between paragraphs and sections.

Single spacing also should be used in those places where conventional usage calls for it, i.e., title page; figure, table, and photo captions; footnotes; indented quotations; and bibliography. When individual footnote or bibliographic entries are single-spaced, there must be double spacing between entries.

Fonts and Font Sizes for the Text and Notes
A font size of at least 12 point must be used for the basic report text. Standard fonts such as Arial, Century Gothic, Helvetica, Verdana, Tahoma, or Times are recommended.

A font size of at least 10 point must be used for footnotes and captions. Script, calligraphy, and specialized art fonts are not acceptable for the main body of the text.

Italics may only be used for quotations, headings, labels, book titles, foreign words, scientific names or occasional emphasis. Fonts for appendices, charts, drawings, graphs,

and tables may differ from that used for the text. The print should be letter quality with dark black characters that are consistently clear and dense.

Filing the Group Project Final Report
Once the faculty advisors approve and sign a group's project, no changes can be made to the final report. The final report, including the completed signature page, must be submitted in electronic (.pdf) format to the Group Project Coordinator by the end of Winter Quarter. A petition is required for late submissions. The final report will be linked on the Bren School website unless it is protected by an NDA. Please contact the Group Project Coordinator with any issues or questions about these guidelines.

The Group Project Coordinator will review each final report to verify that it meets the filing standards and will notify each group if corrections are necessary.

FORMATTING & FILING CHECKLIST

CHECKLIST AREA	BREN REQUIREMENT
Legibility	Clear and legible font used.
Dimensions	8.5 x 11 inches (exceptions made for oversize or special materials).
Number of copies	One electronic (.pdf) copy of final report for Bren School
Margins	Left margin at least 1.25 inches; top line of type, right margin, and bottom line of type at least 1 inch from edge. Other than page numbers, nothing intrudes into margins.
Page Number Placement	Page numbers placed 0.75 inches from bottom edge of pages and consistently placed throughout the report.
Pagination Standards	Each page of final report numbered (except title and approval pages). No missing, blank, or duplicate numbers or pages. Lower case Roman numerals used on preliminary pages. Arabic numerals used to number text and back matter.
Numbering of Preliminary Pages	Title and approval pages counted but not numbered. Subsequent pages (e.g. the table of contents) numbered beginning with Roman numeral iii.
Spacing Between Lines	Text single spaced, except where conventional usage calls for only single spacing (title page, long quotations, etc.) or double spacing (between paragraphs and sections).
Fonts & Font Sizes	A font size of at least 12 point for preliminary pages and text. A font size of at least 10 point for footnotes and captions. Use of standard font recommended.
Dates Used On Approval and Title Pages	Month and year the faculty members will sign the approval and title page.
Abstract	Not to exceed 200 words
Executive Summary	Not to exceed 4 pages
Standards Governing Titles and Taglines	Concise titles and taglines (strive for no more than 10 words). Easily identifiable keywords that summarize research. Word substitutes replace non-alphabetical symbols in scientific titles.
Faculty Signature on Approval Pages	Faculty advisor(s)' signatures in black or blue ink.
Responsibility for Content	Students and faculty advisor(s) responsible for all content of the final report. Primary faculty advisor(s) must review entire final report before signing.

Appendix III

<u>Sample Final Report Title Page</u>

UNIVERSITY OF CALIFORNIA
Santa Barbara

PROJECT TITLE

A Group Project submitted in partial satisfaction of the requirements for the degree of
Master of Environmental Science and Management
for the
Bren School of Environmental Science & Management

by

MEMBER NAME
MEMBER NAME
MEMBER NAME
MEMBER NAME
MEMBER NAME

Committee in charge:
ADVISOR NAME
ADVISOR NAME
(if more than one)

MONTH AND YEAR OF FILING

<u>Sample Final Report Signature Page</u>

PROJECT TITLE

As authors of this Group Project report, we archive this report on the Bren School's website such that the results of our research are available for all to read. Our signatures on the document signify our joint responsibility to fulfill the archiving standards set by the Bren School of Environmental Science & Management.

_____
MEMBER NAME

_____
MEMBER NAME

_____
MEMBER NAME

_____
MEMBER NAME

[The faculty advisor may change this statement prior to submitting this report].

The Bren School of Environmental Science & Management produces professionals with unrivaled training in environmental science and management who will devote their unique skills to the diagnosis, assessment, mitigation, prevention, and remedy of the environmental problems of today and the future. A guiding principle of the School is that the analysis of environmental problems requires quantitative training in more than one discipline and an awareness of the physical, biological, social, political, and economic consequences that arise from scientific or technological decisions.

The Group Project is required of all students in the Master of Environmental Science and Management (MESM) Program. The project is a year-long activity in which small groups of students conduct focused, interdisciplinary research on the scientific, management, and policy dimensions of a specific environmental issue. This Group Project Final Report is authored by MESM students and has been reviewed and approved by:

_____
ADVISOR

_____
ADVISOR

_____
DATE

Appendix V

<u>Sample Group Project Budget</u>

Conference Calls	$30
Project Briefs	$200
Review Meeting Refreshments (permitted only with non-UCSB personnel present)	$50
Software	$100
Presentation expenses	$50
Final poster production and lamination	$240
Conference attendance	$360
Administrative supplies	$20
Business cards	$60
Travel / Site visits	$190
TOTAL	$1300
Printing*	$200

* Printing budget is fixed at $200 to an individual in the Group Project.