The Interfaces of Global Change Experience   **Approved 25 Sept 2020**
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The purpose of this document is to outline the capstone experience for the IGC IGEP, effective Fall 2020. (Updated 08/2025)

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1. **Capstone and Seminar Overview**

- Part of the IGC IGEP curriculum includes three 1-credit seminar courses that are taught each year PLUS an ungraded, non-credit, extracurricular capstone project (described below). This curriculum results in a sequence of three 1-credit seminars and the extracurricular capstone activity.
- The seminar courses will help prepare students for planning their capstone experience, and a Capstone Project Proposal Form will be due as part of the 3rd seminar coursework. The IG3C Chair and Co-chair will determine the deadlines for the Project Proposal Form with guidance from the GCC Office.

2. The Capstone Project (extracurricular, led by students, and mentored by a GCC Faculty Affiliate)

   a. Purpose: To provide at least three of the following learning outcomes
      (1) Practice skills that promote successful team-based collaboration such as project management, team principles, managing team dysfunctions, constructive feedback, conflict management, ideation, after action review, and so on.
      (2) Characterize the differences among and barriers to multi-, inter-, and/or trans-disciplinary projects and develop skills for working successfully on such projects, including working across disciplinary differences of jargon, reward structures, methods, dissemination standards, certification, meta questions, and knowledge structures.
      (3) Apply skills for working at the science/society interface, for example by engaging stakeholders, explicitly considering applications of new knowledge, addressing ethical implications, making connections to policy, or otherwise showing the relevance of your work to the challenges of global change.
      (4) Demonstrate communication skills (any media).

   b. Process: *Capstone Project Organization / Steps to be taken by students*
   - IGC fellows should self-organize in groups of 2 to 5 students
   - Students will need to secure at least one GCC faculty member to commit to mentoring/guiding the project (and ideally more than one faculty member). Non-GCC affiliate mentors may be considered on a case-by-case basis.
   - Submit Capstone Project Proposal Form to the GCC Program Coordinator and cc the IG3C Committee Chair by no later than the deadline set as part of the IGC Third Seminar course.
   - The IGC Director, Dr. Bill Hopkins will review and approve of the Capstone Project Proposal Form or return to the group for edits if needed.
   - After confirmation of project approval students will conduct project work
   - Once project deliverables are completed students will submit the Capstone Project Summary Report with deliverables.
   - The Capstone Faculty Mentor Statement should be submitted directly to the GCC Program Coordinator by your faculty mentor(s) at the same time at your Capstone Project Summary Report.
   - Presentation to IGC peers and GCC Community. We encourage groups to complete all of their project deliverables prior to presenting. Presentations can occur at a single venue each year, typically in the winter, to be planned by the GCC office.

3. Capstone Project Approval & Completion Requirements

a. **Capstone Project Proposal Form**

Students are required to submit their [Capstone Project Proposal Form](#) to the GCC Program Coordinator and cc their [IG3C Committee Chair](#), **due by** the deadline set as part of the IGC Third Seminar course, or earlier (at least 1 month prior to initiation of project). *Capstone Proposals must be submitted and approved by the end of the third seminar to avoid receiving an incomplete for the course. The incomplete will be removed once the proposal is approved.*

The Capstone Project Proposal Form should include:
1. A brief title for the project and a brief description of the project
2. One to two paragraphs explaining how at least three of the learning outcomes listed above will be met.
3. A project management plan detailing:
   - Major tasks
   - Deliverables and their expected completion dates
   - Detailed responsibilities of individual members
   - The year when the group will present at the IGC Graduate Symposium or suggest when and how you will present to the IGC/GCC (ie. as part of a seminar/event)
   - Student signatures *(I agree to commit the time and effort required to complete this project)*
   - Signatures of each student's PI/Committee Chair *(I approve the student's participation and responsibilities as outlined for this project)*
   - Faculty Mentor(s) signature(s) *(I agree to serve as an advisor/mentor on this project)*

b. **Capstone Project Summary Report**

Each student group shall submit a single document that summarizes the Capstone Project reflection and outcomes. This must be submitted at least 3 months prior to graduation with enough time for IGC leadership to approve and follow up with any questions.

The Capstone Project Summary Report should include:
1. Cover page with names of students and title of project and GCC mentor(s)
2. Summary and list of deliverables (what, when, where, how) (< 200 words)
3. Brief reflection by each student about lessons learned relevant to their career as an IGC scholar
4. Briefly suggest how to improve the capstone experience for other IGC fellows.
5. Appendix with deliverables that can be attached, including papers, abstracts, videos, websites, etc.

c. Capstone Faculty Mentor Statement

Additionally, please ensure that your capstone project faculty mentor(s) submit a single, brief statement describing how the project provided a meaningful learning experience and suggestions for improving the Capstone experience (~100 words). This should be submitted via email directly to the GCC Program Coordinator.

d. Presentation

Finally, students must present their capstone project to IGC peers. Presentations can occur at the approved venue where the presentation is open and advertised to all GCC Faculty/IGC fellows, will have a high level of attendance, and should feature more than one group presenting.

Students are expected to give a talk, not a poster presentation. We encourage groups to complete their project deliverables prior to presenting. The capstone presentation, which is required as part of your capstone, *is meant to be given to the entire GCC community.* This presentation is focused more on the process, including:

- Providing a high-level overview of the project, including details, goals, project management timeline and planning, collaboration strategy, and inspiration/motivation.
- Identifying the learning objectives targeted and how they were incorporated or achieved.
- Relaying any positive experiences you gained from the project work.
- Sharing challenges experienced, how you overcame them, and what you learned from them

4. Capstone Project Expectations and Examples

a. Expectations of Faculty Mentors
- Consult with the IGC IGEP director, IG3C committee chair, & the GCC program coordinator/ staff at project initiation, and throughout the project as needed. If needed, GCC staff will check in with faculty mentors mid-way through the project to provide assurance that the project is progressing, and all student team members are participating.
- Keep the project scope realistic and student-centered: Do not impose your own data analysis or project deliverable needs on student project development and execution.
- Meet occasionally with students to brainstorm ideas, review progress, mentorship, discuss literature, etc.
- Help set expectations for deliverables
- Organize check ins, request updates, make sure the students are making progress
- Provide review of deliverables to ensure learning outcomes are achieved
- Have fun and generate ideas

b. **Example Capstone Deliverables**

Required:
1) Presentation to the IGC/GCC community in a public forum. This serves as the assessment/accounting mechanism and shares information within the GCC
2) Capstone project summary report
    Any combination of the following, optional:
    - Proposal for research project
    - Paper to be submitted to an outlet read by some in the GCC community
    - Blogs, tweets, social media campaign
    - Project report write-up
    - Presentation(s) to stakeholders
    - Strategy or Policy recommendations for how stakeholders will address some challenge
    - Websites, videos, URLs, ...
    - Course Development: syllabus, lesson plans, pedagogy, ...
    - Etc.

c. **Example Capstone Projects**

- Visit our website for a full list of past and current IGC Capstone Projects.
- Video recordings of past student capstone project presentations are available to view here, link accessible only to current IGC Fellows and GCC affiliates.
- Look for opportunities to work with GCC's Creative Collision working groups
- Look for opportunities to work with GCC faculty seed grant program
- Interdisciplinary Research Project: Stream Lab at Stroubles Creek. A group of 7 IGC fellows self- organized to conduct an extensive data analysis and collaboratively author an article that was published in a peer-reviewed journal
- Science Meets Community: Freshwaters Illustrated documentary film screening & expert panel discussion. A student-organized event that was free and open to the public, hosted at The Lyric Theater in downtown Blacksburg.
- Science outreach and education. Ex. Flip the Fair: Flipped Science Fair and Graduate Student Training - An IGC capstone team collaborated with the Roanoke City Public Libraries to host a Flipped Science Fair, where graduate students presented posters about their research, and elementary students (ages 8–10) served as judges.
- Science policy. Ex. V-SCI: Connecting Science with Local Environmental Advocacy - Four IGC students completed two reports analyzing environmental impacts from the Atlantic Coast and Mountain Valley Pipelines, and submitted their findings as referenced public comments to the U.S. Fish and Wildlife Service and the U.S. Forest Service.

d.　**Capstone Project Administration**

- Proposals should be submitted to GCC Program Coordinator via email and the IG3C chair should be cc'd on the email.
- Chair and IGC IGEP director jointly approve applications, or will consult IG3C committee members for advisement
- GCC Program Coordinator stewards record keeping and organization

5. FAQ

What is an illustrative Timeline?
(1) Self-organize (within or independently of IGC seminar courses) and recruit faculty mentor(s) during first three semesters at VT
(2) Submit the Capstone Project Proposal Form during the 3rd IGEP seminar
(3) Meet with faculty mentors and conduct project over one or multiple semesters
(4) Complete deliverables and submit along with Capstone Project Summary Report within a couple months of project completion
(5) Work with the GCC leadership and staff to schedule project presentation(s) to share with the GCC and IGC community

How do I pick a project?
This process should be fun and educational–a chance to practice the skills you are learning in the IGC IGEP. Make sure it is something that you and your team are passionate about. Use it as a chance to build professional relationships with your IGEP-mates, a faculty mentor, and potential stakeholders. And remember: unlike a class, this is an activity that you can actually put on your CV. Do something meaningful towards your own professional development.

When should I begin?
Project planning and group forming activities will be discussed as part of the IGC seminar courses. However, students may initiate a project outside of the seminar schedule. The earlier you start, the better!

Can project team members include non-IGC students?
Non-IGC team members are allowed but at least two of the project members should be IGC Fellows.

How long should it take?
- From one to several semesters. Be sure to factor in the commitment for each group member (e.g. graduation dates, field work, etc.)
- You must achieve the learning outcomes of the project for it to be approved
- Aim to have it completed by the end of your third year of your PhD. You don't want any other obligations in your final year(s) of your PhD.
- A word about workload/effort: Don't stress or overcommit. The effort that goes into this project should be equivalent to a 2-credit hour graduate capstone class. Focus on achieving the learning outcomes rather than changing the world (but change the world if you can)