

The purpose of this document is to outline the new capstone experience for the IGC IGEP, effective Fall 2020 (revised, Fall 2021). The [IGC Capstone Discussion Paper](#) details motivations for inclusion of the capstone project in the IGC IGEP curriculum.

A. Curriculum changes and impacts:

- The former 3-credit IGC capstone course taught every other year is reduced to a 1-credit seminar course taught every year PLUS an ungraded, non-credit, ex-curricular capstone project (described below). This revised curriculum results in a sequence of three 1-credit seminars and the ex-curricular activity.
- The first and second seminars will be revised so that as much Capstone content as possible is covered throughout the three seminars. The reduction of overall curriculum content from 5 to 3 credits will require some content to be covered in less depth. IG3C members will lead in organizing the content.
- The three 1-credit IGC seminars will be taught every year. IG3C members will lead organizing and delivering these seminars and will engage GCC members to contribute, with the goal to deliver seminar courses that represent, as much as possible, the wide breadth of expertise within the GCC.

B. The Capstone Project (*extra-curricular, led by students, and mentored by a GCC Faculty Affiliate*)

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)

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 (ideally more than one faculty member)
- Submit capstone project approval form to the [IG3C Committee Chair](#) and [GCC Communications & Strategic Initiatives Specialist](#) by the end of the IGC Third Seminar course
- Receive project approval
- Conduct project work
- Submit Capstone Project Final Reflection Summary with deliverables
- Presentation to IGC peers (at Graduate Symposium or some other venue such as IGC seminar, GCC webinar, etc.)

Capstone Project Approval & Completion Requirements:

Capstone Project Proposal Form

Students are required to submit their [Capstone Project Proposal Form](#) to the [IG3C Committee Chair and GCC Communications & Strategic Initiatives Specialist](#), **due by** the conclusion of the IGC Third Seminar course, or earlier if at least 1 month prior to initiation of project.

*Students who have already completed the IGC Third Seminar: Capstone Project Proposal Form due date is end of spring semester 2022, May 4.

The Proposal should include:

1. A short paragraph explaining how at least three of the learning outcomes listed above will be met.
2. 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)

Capstone Project Reflection Summary

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 Reflection Summary should include:

1. Cover page with names of students and name of project and GCC mentor/s
2. Summary or list of deliverables (what, when, where, how) (< 200 words)
3. Brief statement by GCC Faculty mentor describing how the project provided a meaningful learning experience and suggestions for improving the Capstone experience (~100 words)
4. Brief reflection by each student about lessons learned relevant to their career as an IGC scholar
5. Briefly suggest how to improve the capstone experience for other IGC fellows.
6. Appendix with deliverables that can be attached, including papers, abstracts, videos, websites, etc.

Capstone Project Expectations and Examples:

Expectations of Faculty Mentors

- Consult with the IG3C committee chair, IGC IGEP director, & the IGC program coordinator/staff at project initiation, and throughout the project as needed. At a minimum, faculty mentors should check-in informally with IGEP leadership at the beginning of the project and mid-way

- through the project to provide assurance that the project is progressing, and all student team members are participating.
- 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 achieved
 - Have fun and generate ideas

Example Capstone Deliverables

Required:

- Presentation to the IGC/GCC community. This serves as the assessment/accounting mechanism and shares information within the GCC.

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
- Presentation(s) to GCC community
- Strategy or Policy recommendations for how stakeholders will address some challenge
- Websites, videos, URLs, ...
- Course Development: syllabus, lesson plans, pedagogy, ...
- Etc.

Example Capstone Projects

- 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 submitted for publication 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 Theatre in downtown Blacksburg.
- Video recordings of past student capstone project presentations are available to view in the [IGC Capstone Project Ideas Google document](#) (link accessible only to current IGC Fellows and GCC affiliates)

Capstone Project Administration

- Proposal submitted to IG3C chair and GCC [Communications & Strategic Initiatives Specialist](#)
- Chair approves straight forward applications or consults IG3C committee members and/or IGC IGEP director for advisement

- GCC [Communications & Strategic Initiatives Specialist](#) stewards record keeping and organization

C. FAQ

What is an illustrative Timeline?

- (1) Self-organize (within or independently of seminar) and recruit faculty mentor(s)
- (2) Submit the Capstone Project Proposal Form
- (3) Meet with faculty mentors and conduct project over one or multiple semesters
- (4) Complete deliverables and submit along with Capstone Project Reflection Summary
- (5) Schedule project presentation(s) to GCC and IGC community

When should I begin?

Any time, perhaps best during/after the first seminar when you meet other IGC members.

Can project team members include non-IGC students?

- Non-IGC team members are allowed but the majority of 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
- 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).

How can the GSO help?

Organize a meeting or email several times a year that get students talking about this topic