

Note: lettered responses represent the same individual across the questions, so that all “a)” responses come from the same person, and so on.

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**1. Start with an evaluation of yourself. What were your personal goals in taking this course? Did you achieve them? How would you have proceeded differently if you were doing this course again? What have been your major personal obstacles to learning more from this course?**

- a) My goals going into this course was to get a better understanding of how critical thinking can be used in the study of biology. Despite how much I struggled with this course, I feel that I now have a good grasp on that. If I were to take this course again, I would seek to put more focus and more emphasis on my revisions, as I feel that understanding the revision requests and how to address them were my biggest struggles in this course.
- b) I didn't really start off with any goals for myself when I signed up for this course. I just wanted to choose a topic that I liked that would fit the criteria for the course. If I were to take this class again, I would have picked an entirely different topic. By the time I realized that my topic choice might not have been the most logical for the course, it was too late. The obstacles I faced during this class were trying to relate the themes to my topic. This could have been avoided if I chose a different topic.
- c) My personal goals were to develop my critical thinking skills, having not had the opportunity to grow or challenge them in any class before. I would say I'm on my way, and this class certainly helped build the knowledge of what I need to work on, but I'd say my achievement is a "work in progress". If I was taking this course again, I would have tried to make it my only current course, or at least not done it concurrently with an entire other course load, therefore I could spend more time developing my ideas without a rushed feeling. My major personal obstacles have been to change the way I've thought and researched topics for my entire life. I have always been thorough, methodical, and informative, always with a finalized ending. That's not to say critical thinking isn't thorough, methodical, or informative, but the ways in which you get there by questioning yourself leading to more questions about a topic was certainly a big change for me. I found myself falling back into old habits, so that was definitely an obstacle.
- d) My goals were to expand my thinking surrounding biology in society. I achieved this goal, but not to the extent that was possible. I was in transition for most of the course, and unfortunately this took a toll on the time and space I was able to afford my thinking. I would have organized my time more effectively and perhaps just "tried something" rather than agonize over whether or not what I was turning in was good enough, or even in line with what was wanted.
- e) I really wanted to engage deeply with the material of this course as it is of special interest to me, directly related to things I want to pursue in the future towards career and activism. That said, as my work is still in progress, I have not fully taken (yet) from the course what I intend to. If I had a do-over it would be to establish a more solid learning environment for myself where external goings-on could not interfere with my ability to engage and learn.
- f) My goals were to learn about and develop stronger critical thinking skills. I have learned a lot about critical thinking but am still early on the road to mastering it. It has been beneficial to learn the differences between my work with factual tv content and more thoughtful critical thinking as considered in the course. Doing this course again, I would do fewer other courses so I could devote more time to the thinking and reflection it needs. I have felt my attention tested throughout the semester by a course load that is too ambitious.
- g) One of my overall goals in taking this course was to be confident in my research, original and creative thought. I started saying "I have no original ideas" verbatim from my initial course profile. What a shame I ever even wrote that, and multiple times throughout the semester. I realized that isn't something

you learn, to have creative thought, it's something you learn to utilize. Of course I have a creative mind! We all do. It's just some are better at putting gas in the car, so to speak. A lot of this is a confidence hurdle, and I believe that I have accomplished this overall goal. I am more confident because I realized I was so consumed with being perfect, or being right, and that is what was truly holding back my thought processes around complex ideas and my confidence suffered through that.

- h) My personal goals in taking this course were to grow my knowledge and critical thinking ability in the context of biology. I wanted to gain skills on how to properly conduct critical thinking. I am not sure if I achieved these goals. I definitely struggled in this course with applying the themes of the week to my chosen topic. Throughout a majority I was conducting research and trying to learn new things about my topic, but it was more solution based than critical thinking based. Now with the completion of the final project I am realizing where I went wrong. I would proceed differently by completing the installment revisions sooner and having more office hours if I felt that I was struggling with the critical thinking. I think major obstacles have just been myself and maybe not listening to feedback and comments as well as I could have.
- i) Prior to starting this course, I was in a place of uncertainty and filled with anxiety upon reading the syllabus. Anytime that I was confronted with the phrase “critical thinking,” I automatically went into my shell and didn’t want to come out. I think a lot to do with this was years of self-doubt and negative self-talk about my ability to think critically – I’ve never had to do a course like this before. In taking this course, I hoped to simply become more open-minded, intellectual, and question things in ways that I never would’ve thought of before the course. I do believe that I achieved these goals... I tend to ask a lot more questions, even if it’s just to myself, and recognize that room for improvement in critical thinking isn’t something that I have to shy away from. If I were to take this course again, I think I’d first tell myself to relax. I’d recognize that most other students feel similar to me, and that I’m not alone. However, personal obstacles have been that I still feel a little confused about not having any answers. This is something that I have been grappling with but can’t seem to overcome. It bothers me, and when I start writing I tend to catch myself attempting to draw conclusions instead of simply posing questions.
- j) One personal goal I had was to expand and improve my own thought process this semester. I think I did improve a bit, I have a tendency to overestimate my abilities and have been working on checking myself am reevaluating what is possible and what is true when it comes to myself. I think if I did this class again I would definitely give myself more time and set more week by week goals based on this class. A major obstacle that comes with this class is that I definitely bit off more than I can chew this semester; the past few months have been a tug of war between all my different responsibilities and I do not think I was able to put 100% of myself behind my work.
- k) In taking this course, I wanted to enhance the topics that I am exploring in my professional context - and add to my understanding or considerations (i.e., critical thinking) about these topics. My goal was to deepen my knowledge but also see topics from multiple different angles, perhaps even angles that I was not sure existed. I think that I achieved those, although perhaps in slightly different ways than I imagined (e.g., slightly less technical and more philosophical than I anticipated). If I were doing the course again, I think I might have actually chosen a different topic. There were pros to exploring a theme/topic that I am immersed in in my professional context, but the con was that when I was coming back to it week over week (both in my 9-5 and also in this course, I felt like I was completely saturated and I started to lose passion. I can see how learning about something new/different might have provided different learning outcomes and been a different experience. My major personal obstacles to learning more in this course were just constraints on time. I felt like I didn't have the time/space to focus on revisions in the way I might have wanted to in order to get the most possible benefit from the course.
- l) Personal goals included a hope to be better versed in the ways society has influenced many parts of Biology that I had not previously considered. I imagined that whatever themes I chose to immerse myself in would inevitably manifest themselves into my classroom teaching. These were indeed met. If I were to take this course again, I believe I would have kept in mind the fact that a final product that relates immediately to the classroom would be a beneficial item to create, as it was not until the end that I decided to dedicate my time to creating a helpful tool for educators. The major obstacle was time management due to the simultaneous full time job and also taking CCT693.

m) I have more of a humanities background than one in the hard sciences, so one of my goals in this course was to learn more about the biology aspects and use them to inform my research. I would say that I somewhat achieved this, but since there was a lot of room for individual development of work I found my ideas generating from topics I already knew some things about. That's not to say I didn't learn from further exploration of those topics, but I did find myself gravitating to more humanities-based research. I think if I were to take the course again, I would travel farther out of my comfort zone in terms of academic focus. I think my major obstacles to learning more was maybe a preconceived notion that I should stick with things close to what I was already more comfortable with disciplinarily.

**1. Self-evaluation (continued). What have you learned about what you have to do to make a course stimulating and productive (with respect to the format of this course: face-to-face, online, hybrid)?**

- a) I continue to find the hybrid format of courses to be very productive and engaging, while also ensuring that I am at my best.
- b) I have learned that face-to-face is the best way to approach learning. Establishing a relationship with the professors is not the same when it is done online.
- c) I loved the online class version of this class, where we would frequently break off and discuss with each other our thoughts and ideas during activities and discussions in classtime.
- d) Minimize distractions, participate in the blog, build relationships with classmates in small groups and private chats, set up regular meetings with professors to make sure that I am on track.
- e) Taking this course entirely online has been an interesting challenge, that while very convenient, does not provide the same level of engagement with material that I feel I get in the classroom when I am on campus. Not having to commute made taking this class possible though, and appearing via zoom has enhanced my skills towards this type of technological interaction, which I believe will prepare me for a future that is headed very much in this direction in the professional world I seek to enter.
- f) This course has done loads to make it engaging for everyone, and I think the constraints of the Zoom system actually focus attention. I admire the care that the instructors have put into making the course work for such a broad group of students in different settings.
- g) For me, I was in the classroom and therefore felt it was a rather traditional format. Though there were students online, that didn't really impact me here. Something that became relevant early on in terms of engagement was that I was the only grad student in the classroom. For the first couple weeks, the undergrads would ask me after class in the short 3 minute walk if I had ideas, resources for them, what the theme meant, etc. It made me feel good and scared at the same time! I realized they were sort of pushing me to lead (intentionally or unintentionally, perhaps just to take pressure off them), but this is my second grad class ever (first in CCT) and I felt just as clueless as them. I decided that I should try to lead my example, plus, I enjoy engaging in class and want to speak up anyway. I wanted to lead in a way that showed I was new at this too and all comments are valuable to the discussion. Often it felt like myself and Peter were talking more often than not, so that was a participatory struggle. I wanted to talk every time but often let the silence go so they felt compelled to participate. Over time, they offered their own voices and stopped asking for mine, which I appreciated. Anyway, something that was engaging for me was being the only grad student and although it was occasionally quiet, it was nice to witness their growing as young students.
- h) I think I like face to face courses even though I am an online student. With this course it was difficult having Peter in class and Morgan leading the online portion. I felt that I may have missed important information or more time with Peter because of this drastic split. I also felt that there was some disconnect from time to time between Peter and Morgan. So I feel that I am most stimulated when it is one professor teaching both the face-to-face and online, not splitting the class.
- i) I believe that in order to make it stimulating, you really need to come prepared. For example, if you don't read the articles, no one can contribute. I understand that life gets in the way sometimes (I am guilty of this), but in order for it to be productive, people need to be informed about the topic of the

lesson. Also, people need to be willing to be vulnerable to their questions or uncertainty – that way, we can learn from each other and grow as a class.

- j) In order to make a class stimulating, I definitely need to put in the work before class so I do not feel like I am falling behind during the class time. I have come to realize that if I half ass the assignments before class than I do not feel like I can participate fully during class and am therefore not as engaged or productive as I can be.
- k) I have reflected on this before, but for me the stimulation/productivity comes with connection. I leveraged office hours as well as connections with peers to help me through this course. I feel like I was able to implement some of the things that I wanted to help support me in this course.
- l) I need to be extremely organized in order to be productive and remain engaged. Preparation, class, and follow up, in addition to revisions and peer commentary all required timelines and clear tagging via the blog.
- m) I think a course like this requires a lot of discipline and planning to ensure that you stay on track. If you fall behind, it is easy for your work to become less inspired/stimulating because instead of focusing on what you are interested in, you find yourself playing catch-up and focusing less on what inspires you.

**2. General Evaluation of course. What was special about this course (+positive and/or -negative)? How did the course meet or not meet your expectations? In what ways do you think this course could be improved?**

- a) I was pleasantly surprised by how engaging the course's subject matter was and how eager I found myself in conducting my research. I believe that it would be prudent to make certain aspects of the written assignments, such as revision due dates, more visible in the syllabus.
- b) This class did not meet my expectations because I was expecting to have more freedom about what I wrote about. I thought I would be able to research aspects of my topic that interested me, not just the themes of the course. I think the themes need to be broader. I know plenty of students were struggling to find ways to incorporate the themes into their projects, but they did know how to.
- c) I liked challenging my way of thinking, though at times it was frustrating to do. I like that it has given me a way to bring aspects of critical thinking into future classes. I understand that critical thinking like this is hard to assess, but I wish there was some better way to gauge where you stand academically in the class.
- d) I enjoyed the content of this course greatly. As the semester progressed, I was able to see how the themes were intertwined. I struggled to connect my theme to the themes of each installment - some were better than others. The syllabus was a lot to digest. I believe there are much more concise and logical (for me) ways of presenting the information in the syllabus so that students are aware of the requirements prior to reaching the half-way point in the course. I found it hard to orient myself, and think that Blackboard would be an excellent option. I want to spend my energy thinking critically about Biology in Society, not about where to find course/session information. It may sound silly, but the formatting of the syllabus played a huge role in making it difficult to navigate. Yes, the syllabus quiz is supposed to familiarize us with it, but it's not enough. It needs a redesign. The assignment checklist provided could be a google form, or something interactive, as well. I also appreciate the instructor's intention to allow the course to develop organically and to not place too many restrictions on it as progressed. That said, I was unclear what the expectations were re: installments and contributions, which was stressful. The only time I was able to make progress was when I threw up my hands, ""saying, well I'm not sure what they want, so I guess I'll just do something."" A more succinct explanation of what we were supposed to accomplish with our installments would have been helpful. Yes, this information is available in the syllabus, but when I spend 10 minutes looking for it and only partially understand what I read, that becomes frustrating and eats away at my confidence. Some of my meetings with professors were helpful, sometimes I felt like an annoyance, or that I just wasn't ""getting it."" Because of this, at times I felt on my own. I needed more direction. Clarification on how we might go about picking a course topic that would tie in well to the themes might have been helpful, as well.

Just more clarity and more formatting, in general. The teachers are brilliant and the content is excellent, but this class was hard for me to follow. I estimate that I got about half of what I could have gotten out of it (due to both personal and course-structure related reasons).

- e) The material of the course is really interesting and stimulating, but not all activities were as engaging as others. The rapid PBL format is one that really helps my own learning process and is quite enjoyable in the way it plays out, both as an actor and as an audience to others PBL presentations. If the course used this as a standing model (which was mentioned) I think that many students would thrive and the experience would provide a richer take-away that could keep students engaged with their thinking on items well beyond the course, that day and even after it concludes. I also struggled with the syllabus and found myself missing things or having to go back and hunt for items which I had missed. Others expressed similar experiences and frustrations. What works best for me is a very linear and explicitly laid out syllabus where things might be stated repeatedly if there could be any confusion, so as to avoid items being skipped or missed unintentionally.
- f) It is very special to study critical thinking in itself. In this regard it exceeded my expectations and I just wish I'd had more time to take advantage of it. I think initially like most students I struggled to know 'what to do' but I found when I reached out for help it was there. As a potential improvement, I wonder if Blackboard Discussion forums might be simpler to organise and navigate than the Wordpress blog?
- g) I've never had a course like this, not even close. I enjoyed the room to be creative and apply the themes of the course in whatever way we saw fit. I also appreciated the themes in general, as I had never considered origin stories, the natural selection topic, or even favored social ideals fueling science. I thought science was (generally speaking) fact and that seems foolish to have ever thought I appreciate that this course really did bring to light what was sort of obvious all along but never considered in my mind. Additionally, the fight to OK/RNR's, though it was difficult at times. Therefore, that is my negative comment, which I feel was my own doing - the revisions. I would work for hours on an assignment, submit, get the revision comments, and feel defeated. Even though I 100% knew that was the style of the course. Up until the last installment, I NEVER submitted a superficial or partially-complete draft knowing I had to revise anyway. I felt so compelled to submit what I thought was 'perfect' and I'm afraid I never really shook that. Also, when I did receive feedback from the instructors, every single time I thought, "darn! they're completely right." I would say to improve this we should work out the ideas ahead of time with the instructor, but that defeats the entire purpose, it really does. Therefore, I believe the solution is to improve my OWN thinking around revisions.
- h) This course was a challenge. I don't think I was prepared for the amount of work it would take. From the reading to prep for class, writing installments from the previous theme, and getting comments on past installments and revising sometimes 1 or 2 times based on feedback. I feel there could be more information provided about the installments and the work they take prior to being signed up for the course.
- i) This course was unlike any course I've ever taken. While it was to fulfill a biology requirement for my M.Ed program, I am happy I took it. I have never been enrolled in a class in which I didn't receive "grades" or didn't have exams, so it was a new way of learning. It met my expectations - mainly, I am able to better think about the way I see the world. As a science girl, I also think it helped to break the misinformation that critical thinking has nothing to do with science. I completely disagree with that statement now. Although I believe the course was purposefully "unstructured" (within limits, of course we had due dates and things like that), I believe that sometimes it became overwhelming. I know that the feedback on installments helped, but I never feel like I was being told that I was doing something right or wrong. I guess that is the whole point of the class - there is no right or wrong, but it's hard for me to get used to that idea.
- j) This course is different from any class that I have taken before in the fact that it was more critical thinking based. I wish the class did have more structured guidelines. I often felt confused about what questions were being asked of me and what I was supposed to contribute. One example of this would be the presentations-- I had no idea what I was supposed to be presenting on except that it was supposed to be based on my semester-long project. As someone who suffers from anxiety, this became a huge

stressor for me and really held me back. I think in the future you should give more clear instructions so people have a solid starting place move on from.

- k) This course was unique in the approach to PBL it took. I also appreciated that it was co-taught and that the instructors had different approaches; it meant that we could work with both in slightly different ways and get different types of feedback and support. Morgan in particular was very helpful in terms of providing moral support and helping me to feel like my questions and concerns were valid and heard. The workload was a negative of this course and I found it influencing my attitude about the entire experience. While I appreciate the revision process, I felt that the weekly workload of class prep + new instalment + revising past instalment was too much, and that seemed to be reflected in the entire class not necessarily meeting syllabus expectations. I don't have issues with the content of the course (i.e., how to improve it) but I would definitely reconsider how it is structured and address parameters for instalments; I hoped for greater communication and dialogue as a group. The syllabus was comprehensive, but due to inconsistent formatting it also meant it was difficult to follow what was due when (particularly within a weekly session, to determine what was pre-work versus in-class work) and it was sometimes a challenge to stay on top of things.
- l) The chapter themes were quite interesting, and detailed areas of Biology in society that I would not have investigated (perhaps ever in life) had I not taken this course. I would recommend that if revisions were expected from most of the installments, perhaps some sort of work load offsetting (only x of total chapters, and x of total installments need to be completed).
- m) This course is structured in a very different way than others I have encountered. I admire the effort to make the class more interdisciplinary and placing control in the student's hands to facilitate their own learning based on guiding themes. However, because the course is laid out so differently than more traditional ones, there was a lot of new methods and expectations that a lot of times in my opinion weren't made entirely clear. I found the syllabus to be very long and confusing, and I think it could be simplified to be clearer to students what the expectations of the course are. I also think that some of the activities/thought exercises we did in class fell a bit flat in that they were sometimes very broad and I sometimes felt like I had to make things up on the spot that I didn't feel a real intellectual connection to, but just needed something to say. Also, I found the Wordpress layout to be a bit confusing. The specifics of themes were not always clear to me, and I think it would be helpful for the instructors to provide write-ups of exactly what the theme is for each set of installments. There was a couple times where I went with what the reading/post tag noted as the theme, and got feedback that I was not writing about the right thing. In general, I think there could be more clarity around expectations and organization of the course.

**2. General evaluation (continued). In what ways did your attitude to doing the course change through the semester? How does it compare with other graduate courses? What would be your overall recommendation to prospective students?**

- a) I was incredibly nervous for a good number of weeks due to falling behind on revisions, but thanks to my commitment, I was able to complete them, even if not always on time. I would recommend future prospective students to read the syllabus thoroughly, not just skim read it, to fully understand what is expected of you in both written assignments and participation items.
- b) My journey through this course have made me more eager to engage in critical thinking. Doing installments became easier as the semester went on. My recommendation to prospective students would be to know what you're dealing with before you take this course. I came in with a certain set of expectations and disliked the course when it did not meet those expectations.
- c) My attitude fluctuated throughout the course. I felt engaged stimulated when we did the classroom activities and discussions, and I felt confident with the connections I would make in my installments, but then I would have to do revision after revision, and this class plus everything else in my personal life got crazy and I began to feel panicked, rushed, and frustrated that maybe I wasn't getting the hang of it. My overall recommendation to prospective students would be to not look at revisions as failures, but just a

way to think deeper, but also allow yourself the time to devote to this class, if you have an already overfull course load it will be difficult to balance

- d) The course grew on me over the semester. Once I knew where to find things and embraced the vagueness of it all, I began to make progress. Unfortunately, sometimes this just felt like I was making things up. I would recommend taking it, but be very persistent at the beginning of the course so you understand the expectations. Try to get them narrowed down for you. I did not find examples of installments, contributions, or final projects very helpful.
- e) Other than being exceptionally distracted because of personal issues, my attitudes about the course did not shift - my interest persisted and remains and I am eager to complete the work because of my interest in the subject matter and the way I was able to shape the learning experience to my own interests. This course feels comparable to other courses I have taken in CCT, but divergent from some in format and framework. I find them all equally stimulating, challenging and conducive to learning. In terms of a recommendation to prospective students there is so very much to learn from this course, which is to say that a lot of personal growth and development as a thinker can happen here, around the subject matter, which can then be applied more broadly. The title and description do not convey this enough, this is not just another science class! This class happens in a way that works very well for individuals who might not be readily interested in biology or life sciences, as well as those who are more experienced and base their education in the fields -thinking critically about science is a rare treat. This class delivers!
- f) My attitude has changed toward my self-perception about my thinking skills, and my creative problem solving skills. I think I have learned that I have a lot to UN-learn, and how to hold back from leaping to conclusions, because that is the way tv operates and it has become 'engrained' in me. I would recommend to other students that they be prepared to have their thinking challenged, because it will benefit them! And I suggest they not pack their schedule because this class is worth the time needed to get the most out of it.
- g) I got use to the format by the half-way point and really didn't want to go back. At first I thought I would never "get it." What the teachers wanted, what the themes were, etc. I realized that there is nothing to "get"! Just as I was afraid I didn't have original thought. Your journey with critical thinking is subjective and overcoming that fear is part of the necessary process. I feel I have overcome my 'fears' surrounding semester-long research projects and lack of original thought. I still need to work on my neurotic, perfectionist- ways.
- h) I think towards the beginning, I was very excited to take this course because the topic was one that I was interested in and related to my field of work. However, I do not think I was prepared for the amount of work and the challenge that I was facing. For some reason I had a very hard time with this class and that discouraged me. I was not enjoying my time with it towards the middle because I felt dumb. I was constantly having to revise my installments and I felt like I wasn't getting it. But then in an office hour, I think it was noted that the comments are not to cause concern but to help you explore new avenues and new ways of thinking. This course was different because we were not working towards a final project, which I had been used to in other CCT courses. My recommendation would be to be prepared to work hard and feel frustrated and confused at time, but for them to understand that this is part of the critical thinking process and things will start to make sense in time.
- i) Over time, my attitude definitely changed. I will be honest and say initially, this class's process is not something that I looked forward to. I think that the specific feeling of anxiety was almost making me resent the fact that I'm not "a critical thinker." However, over time, I became more accepting of the course and learned to appreciate it. It is unlike any other graduate course, in the sense that those courses have frequent, valued assessments. While I am free to think and provide original ideas, none of the courses I have taken actually made me "think critically." I was given a rubric, and I followed it, and received it a grade. As advice to prospective students, I'd simply say to embrace the journey. Realize that it's ok to not know everything, but also acknowledge that you know more than you give yourself credit for (initially). Take your time, don't get overwhelmed. Learn embrace on multiple perspectives and opinions.
- j) Over the semester I started getting more and more frustrated with what was required of us and where it led. I felt that a lot of the readings and activities did not have a lot to do with my overall project and I

struggled to link subjects (e.g. the IQ debate) back to my own project. I started off very excited about this class and excited to further my thinking process, but over time I just got very stressed out. This is a lot different from the other graduate classes I have taken because the guidelines in those classes were outlined in the beginning and the workload is also much greater in this class. To people considering this class in the future, I would recommend looking at the other work they have to do and make sure they know what a huge commitment they are stepping into.

- k) This course was the most challenging of all the ones I have taken in the CCT program. It was work-intensive, fast-paced, nebulous in terms of instructions, and dense with content. I was not able to keep up with the workload and so was occasionally unprepared; as a result, my positive attitude and openness to learning seemed to decline as we progressed through the semester. By the end, I found myself just trying to "get it done". I think that there is a lot of great stuff here, but I really struggled both to maintain momentum and stay curious. My overall recommendation would be to plan to devote more time to this course perhaps than other grad courses - to leverage office hours with the profs as much as possible - build in support systems with peers - and to not expect everything to be "perfect", embracing the revision process as ongoing works in progress.
- l) As we got closer to the final weeks, WIP presentations and draft due dates mirrored CCT693's schedule. This made for an extremely difficult work load for me as a student who is scheduled to regularly take 1 course per semester (except for one during the three year track). Since this and 693 were perhaps the most challenging and revision-heavy courses I have taken thus far, I felt burnt out from session 11 onwards and it was difficult to stay motivated. I would recommend to other students (and faculty) to not schedule these two core courses at the same time.
- m) I think I came into the course with the expectation that it would be very interdisciplinary and open to academic exploration. I think this expectation was met, but what surprised me is often how difficult it was to create your own structure from scratch. It was up to you to make the material compatible to your interests, which could be both rewarding and challenging. Compared to my other courses, I found it to be more open-ended in this way but also often frustrating. I think some of this frustration was productive in that it helped me to figure out what I needed as a learner to continue my project. Other times, I wasn't sure if it was that or a frustration about pinpointing exactly what was being asked in terms of assignments. To prospective students, I would say 1) read the syllabus as carefully as you can and 2) don't be afraid to ask questions when you are confused

**3. Evaluation in relation to the course description. Read the course description/goals below. Comment on how well the goals expressed in the syllabus were met. Make general and specific suggestions about how these could be better met.**

*Current and historical cases are used to examine the political, ethical, and other social dimensions of the life sciences. Close examination of developments in the life sciences can lead to questions about the social influences shaping scientists' work or its application. This, in turn, can lead to new questions and alternative approaches for educators, biologists, health professionals, and concerned citizens. Critical thinking about the diverse influences shaping the life sciences. Topics include evolution and natural selection; heredity, development and genetic determinism; biotechnology and reproductive interventions. We interpret episodes in science, past and present, in light of scientists' historical location, economic and political interests, use of language, and ideas about causality and responsibility. You address the course material on a number of levels:*

*-as an opportunity to learn the science and approaches to interpreting science;*

*-as models for working as an educator--construed broadly as stimulating greater citizen involvement in scientific debates; and*

*-as a basis for discussions about practices and philosophies of education and lifelong, collaborative learning.*

*You undertake individual semester-long "learning/engaging" project in an area of the life sciences in their social context about which you are interested in engaging others in learning and critical thinking. Each week you adopt or adapt the themes and activities from the previous session to apply to your*



*project area. This provides many tools and perspectives on self-directed research (and thus serves as a research seminar for honors students).*

- a) I found the new ways to interpret critical thinking and science to be very engaging and meeting with the stated goals. The instructors were very helpful and patient, helping me to better understand what was needed of me when I found myself struggling with each installment's requirements. I greatly appreciate how patient and understanding the instructors were.
- b) As I said before, I came into this class with certain expectations. I think the description of the semester long project needs to be more specific, especially when it comes to how to adopt the themes. I think an in depth reading of the syllabus should be done on the first day of class so that everyone can be on the same page about what is due and when. Even when I had my first meeting with the professor, I was not sure what questions to ask because the syllabus was so long and detailed. I thought I knew what I was getting myself into. Reading the syllabus as a class would ensure that everyone knows what the deal is early on in the course.
- c) I would have liked to see activities such as PBL integrated into more of the week lessons, or maybe more time talking over installment ideas with peers before class ends?
- d) My semester long "learning/engaging" project felt like an amalgamation of disconnected ideas until the very last moment. That was frustrating. Help students choose topics in the beginning, or provide room for discussion about the guidelines prior to writing their initial description. In Action Research, there is a checklist we used to determine whether or not our intervention was a good candidate for AR; we need something similar here.
- e) My only suggestion might be to convey that the class is appropriate for those who are not traditional science students and that one does not have to have extensive science training to understand and engage with the material and work throughout the course.
- f) The class schedule and expectations very closely followed the course description and the syllabus. I think most students find this course challenging because it is so different in its approach to teaching and learning around the issues of critical thinking and science. I understand why the instructors have often not led us but expected us to fill in the blanks. When I asked for clarification it was readily given and I appreciated this way of relating to instructors. I think a little more guidance at the beginning of the semester about ways to apply the weekly session themes to individual projects would not be detrimental to the learning aims of the course.
- g) The syllabus, first-class student interviews, and blog are all fantastic resources that absolutely reflect the learning outcomes of the course. Even if it wasn't crystal clear in the beginning, it became so. No suggestions for improvement.
- h) I think that the syllabus explains the goals of the course well. I would maybe note that the learning/engaging project is a synthesis of the themes adapted each week. But I do feel that the goals were met in this course.
- i) I think the course fit very well with the above description. It wasn't what I expected from my initial thoughts on what the course would entail, but in retrospect, the above description is exactly what we did. I don't really have any suggestions on how to better meet the above goals.
- j) I think all the objectives were addressed in class and we had the opportunity to engage in all of the course goals. I would have liked to discuss the interpreting science a little more since this is what I thought the class would be constantly addressing. I feel like we each discovered this on our own through our research, but I would have like to have more discussions around these thoughts. We did have a lot of discussions around more specific practices (like in the third goal) and it would have been nice to broaden out the topic more in class. I think working as an educator is different for person to person, depending on where your project took you. In my personal project, I did not address this topic as much as others did.
- k) This course certainly met the description and covered a wide breadth of life sciences material. I would argue that there was perhaps a greater emphasis on the historical versus the contemporary examples, and at times the historical explorations detracted (for me) from the life sciences focus. Perhaps with more

grounding or guidance, the inclusion of philosophy and art could have been more connected to our life sciences content; as it was presented, it sometimes felt disconnected. In general, I would have appreciated either class discussions or assignments that asked us to articulate the "number of levels" on which we were supposed to address course material, as this was not an explicit instruction in our work. Regarding the semester-long project, as the description states, this was an opportunity to explore multiple perspectives in self-directed research. However, having weekly commitments meant the workload was intense, and having time to adopt/adapt themes as well as revise perspectives in response to feedback was a difficult process. Having fewer instalments (perhaps by student choice?) - and/or structuring the course slightly differently - might have meant greater energy available to meet all expectations of the semester-long project.

- l) I find that I am more comfortable communicating with work peers and the general public on a deeper level that takes into account society and culture. For example, when speaking about curriculum and equity in terms of data and ultimate success in society for our students, my confidence grew over the timeline of the course. Even if my knowledge about a certain topic being covered at work had not particularly increased, the critical thinking skills, including areas to take into account such as metaphors, ideologies, and thought processes, allowed me to voice my opinions with more confidence. An area of improvement (perhaps a lecture or readings or activity) would be how to influence and engage others in critical thinking, not just my own.
- m) I believe all of these were met in some capacity, but could have been enhanced with more intentionally structured lessons. Coming into class often felt like a surprise when even when I was fully prepared I had little idea of what to expect and ended up feeling unprepared.

**4. Synthetic statement (1 or 2 paragraphs). Building on your comments from Qs 1-3, compose a synthetic statement (1 or 2 paragraphs) evaluating this course. (Imagine readers who might not be willing to wade through all the answers to Qs 1-3, but are willing to read more than simply the numerical averages of standard course evaluations.) Please make comments that help the instructor develop the course in the future and that enable some third party appreciate the course's strengths and weaknesses. Among other things you might comment on the overall content and progression of classes, the session activities, and the use of mentors to support the learning in the course.**

- a) This course was, in hindsight, one of the more difficult courses I have taken in the CCT courses. The requirements in our writings were more specific than I had expected, and even now I am unsure if I was able to meet all of them. However, I appreciate how patient and helpful the instructors were with me, and I found the class itself to be very lively and full of energy. The instructors were of great help to me and the other students in better understanding the course and the CCT program as a whole.
- b) I can honestly say that I learned something from this course. I learned about the different ways in which people can learn and how those can encourage them to engage in critical thinking. At the beginning of the semester, I was the type of person who would be asked a question and could not go into too much detail in the answer. Now, I know what type of questions to not only the inquirer, but myself. This course helped me realize that the key to critical thinking is to not look at things one sidedly. I have made much progress in the way that I approach certain problems due to the themes taught in this course.
- c) Overall, this course was very challenging for me. I had to reshape the way I have been taught to think for my entire life, which is not an easy task to overcome in one semester. I thought the activities and discussions that were held in class were relevant with the theme of the week, and I understand why each was significant leading towards connecting themes in a final project. I found the mentors extremely helpful and willing to be there whenever possible. I found myself using office hours more often in this class than perhaps my entire undergraduate/graduate career thus far. I also appreciated the constant peer check-ins when we could discuss how everything is going in the class with our peers. I do wonder if a check-in period at the end of class as well might be helpful to some students, maybe to initially bounce ideas off each other after we have completed the week's activity. This would enable students to begin to make connections with what the class had just done to their installment for the week, because for me, with some of the installments, I felt very lost trying to adapt the theme to my personal project. Maybe

more peer dialogue immediately following the activity would have helped stimulate those connections. I appreciated how the weeks seemed to build upon one another throughout the course, and I especially liked the THINK activities. Another small frustration I had was doing everything on the blog. I just think for me, the way the blog and syllabus are set up can get a little confusing. I'm sure transferring to blackboard wouldn't be an easy switch but there were times when I got very lost trying to figure out where to go among all the different pages (chapters page vs. week's page vs. reading page vs syllabus page vs. blog post about chapter etc)

- d) This course will test you. It will test your patience, your organization, and your ability to connect themes and find patterns. You will develop your critical thinking skills. You need to be willing to be a bit uncomfortable and just "try something" in order to make any progress in this class. The themes are interesting and relevant, and you will learn a lot about how science is influenced by the scientists who perform it. Start looking at the syllabus early and get familiar with it. It is complicated, and although well organized, I did not find it easy to navigate. Make use of the course assignment checklist so you don't miss anything. Prepare to feel frustrated and be okay with it if the course is not redesigned.
- e) This course provides a wonderful opportunity for both life-sciences students and non-science students to engage with material related to science in a way that allows beyond-the-box thinking and exploration of ideas, in a number of ways that prove exciting, enriching and educational. The science student may find opportunities to experience familiar ideas from a very new perspective and non-science students a way to work with material that might be too field specific in other arenas to engage with in a meaningful and educational way, that feels accessible and exciting.
- f) I have learned a lot about critical thinking but am still early on the road to mastering it. Doing this course again, I would do fewer other courses at the same time so I could devote more time to the thinking and reflection this course needs. I have felt my attention tested throughout the semester by a course load that has been too ambitious. The instructors try to make the course engaging for everyone, and I think the constraints of the Zoom system actually focus our attention. I admire the care that the instructors have put into making the course work for such a broad group of students coming at the subject from diverse backgrounds. It is very special to study critical thinking in itself. In this regard the course exceeded my expectations and I just wish I'd had more time to take advantage of it. I think initially like most students I struggled to know 'what to do' but I found when I reached out for help it was there. I think I have learned that I have a lot to UN-learn, including how to 'hold back' from leaping to conclusions. The class schedule and expectations very closely followed the course description and the syllabus. I think a little more guidance at the beginning of the semester about ways to apply the themes/clear examples would not be detrimental to the learning aims of the course. I think this would be more helpful than just giving us access to previous blogs and expecting us to find meaning in them while navigating.
- g) Be afraid, but be confident you won't continue to be afraid. The course might seem intimidating and that the resources to foster your critical thinking skills aren't concretely there. They are, but it is up to you to find them. Think of critical thinking and this course not as something you "learn" but as something you "learn to utilize." We all have a car, you just have to put the gas in it. Rest assured that feeling a little lost or confused is part of the process and there is a light on the other side. At first I thought I would never "get it." What the teachers wanted, what the themes were, etc. I realized that there is nothing to "get"! Just as I was afraid I didn't have original thought. Your journey with critical thinking is subjective and overcoming that fear is part of the necessary process.
- h) This course is challenging, but will absolutely help you grow as a critical thinker. It is different from many of the other CCT courses in that it promotes you staying in the unknown, instead of developing a final project. You may have difficulty with the workload that is presented in this course from preparing for class sessions, commenting on other students work, writing installments, and revising past installments. My advice would be to revise as soon as a comment is made, and remember that the instructors are trying to get you to think critically about your topic. Also, if the class is still done in a hybrid fashion, with two instructors, I would recommend trying to go face-to-face if possible. It was hard because I felt as though there was some disconnect between the two.

- i) Overall, I enjoyed this course. It was unlike any other class I've ever taken, and it really got me to think in a way that I never have before. At the beginning, the general sense of freedom resulted in my feeling of uncertainty and for the first time in my life, I even became self-conscious about my academic performance. For once, I wasn't given a test to take or a specific assignment to complete with designated criteria. Peter allowed us to be free-thinking in our installments, with attempts to apply different themes each week, and pushed us to think about things that we didn't think about the first time. Free writing activities were a great way to start going off on mental tangents that I always enjoyed doing, as I tend to be one of those people who is constantly thinking (just don't know how critically!) Morgan was awesome in providing feedback and guidance and was always available for questions or office hours. One thing that I will mention is that sometimes it was hard to see if Peter and Morgan were on the same page – since it is a critical thinking class, neither of them really gave similar feedback if I asked them both for some help. Other than that, I really appreciated this class and it provided me with some great new insight, skill, and perspective!
- j) Personally, this class was very difficult for me when it came to the workload. I was not aware of the time commitment this class was looking for and therefore struggled a lot with the work that was due. I feel like the workload due in this class was very overwhelming and was difficult to get used to. This class also seemed to be a very different experience for everyone based off of their personal projects and what was possible for them to accomplish. This is not necessarily a good or bad thing, but the class was very separated on an individual basis. Since this class was very individually based, I did think it was a little difficult to figure out where to go within our projects and what was expected of us each week and how the class differed from person to person. I think it would be helpful if there were set expectations for each assignment to know where to start. I thought it was helpful that the professors did allow you to take more time if needed.
- k) This course was demanding in workload and asked a lot of students - which was fantastic in terms of fostering independent study and growing resourcefulness. Taking this course demands a lot of mental energy and time (perhaps moreso than other CCT courses), as the content is dense with weekly assignments which typically require revisions the following week as well - working out to two weekly assignments, plus any readings and class preparation. This particular cohort was co-taught and I especially appreciated Morgan's openness to hearing student feedback and providing moral support through the learning process, which is sometimes frustrating and confusing as we develop competencies. In terms of content, there was a heavy emphasis on historical case studies connected to life sciences; current examples often came about through independent research for assignments. These historical examples were sometimes more philosophical in nature and/or required students to make connections themselves about how contexts inform scientific progress. As a very specific piece of feedback, this course would be easier to navigate and be successful in with a restructuring of the syllabus. It is a strong offering within the CCT program but prospective students should be prepared to devote more time and energy and be proactive in seeking out support from instructors.
- l) The chapter themes were quite interesting, and detailed areas of Biology in society that I would not have investigated (perhaps ever in life) had I not taken this course. Some chapter sessions tied to others clearly, and some initiated their own more separate investigative journeys in relation to my chosen theme. Both Morgan and Peter contributed to my thinking and learning process; and I enjoyed the different styles of feedback received from both instructors as it assisted my investigation in unique ways. While I know there was immense coordination needed, I liked the setup of dual professors running the course as there were more opportunities for direct communication and guidance. A word of caution; this course is quite a lot of work as far as CCT courses go, what with requested revisions being common.
- m) I found this course to be inventive, informative, and open to creative ideas. I enjoyed the content and readings as well as the challenge of leading your own learning. Some things I would improve upon are the syllabus, the blog, and class structure in order to make the course more clear and intentional.

**I give permission for my response to Question 4 to be included anonymously in the compilation posted to the CCT wiki (and thus viewable to the public).**

- a) Yes
- b) No
- c) Yes
- d) Yes
- e) Yes
- f) Yes
- g) Yes
- h) Yes
- i) No
- j) No
- k) Yes
- l) Yes
- m) Yes

**Using the scale below, overall, how would you evaluate this course?**

**1. Very Poor   2. Poor   3. Average   4. Good   5. Excellent**

- a) 5. Excellent
- b) 3. Average
- c) 4. Good
- d) 3. Average
- e) 5. Excellent
- f) 5. Excellent
- g) 5. Excellent
- h) 4. Good
- i) 4. Good
- j) 3. Average
- k) 4. Good
- l) 4. Good
- m) 3. Average

**Using the scale below, overall, how would you evaluate this instructor?**

**1. Very Poor   2. Poor   3. Average   4. Good   5. Excellent**

- a) 5. Excellent
- b) 4. Good
- c) 4. Good
- d) 4. Good
- e) 5. Excellent
- f) 5. Excellent
- g) 5. Excellent
- h) 4. Good
- i) 4. Good
- j) 3. Average
- k) 4. Good
- l) 5. Excellent
- m) 3. Average