**Short essay guidelines**

Terrestrial Ecosystems (BIOL 416) Fall 2023

**Essay assignment**

This exercise is designed to be an opportunity to further develop your ability for critical and original thinking, and for presentation of those ideas in concise written form. Each of you has spent considerable time preparing your seminars, developing an interesting focal seminar question, and doing background reading around your seminar’s core question. You will have learnt a substantial amount during these processes, in the interactions with the rest of the group (including the questions they presented to you), in your own post-seminar reflections, and of course in the multiple farm field trips. For this short essay, I want you to take that learning to the next step by writing an interesting and creative short essay in support of (or against) the following thesis argument:

***Ecology at the ecosystem level of hierarchical organization contains unique biological concepts. Implementation of the following three concepts in agroecosystems would significantly help many farmers to develop more environmentally sustainable crop production practices: i) concept 1; ii) concept 2; iii) concept 3.***

**Essay exercise**

Writing a high quality, concise essay is a difficult and challenging task. – Believe me, I know that!! But it is also an extraordinary opportunity for you to develop your capacity for independent learning – i.e. the overall goal of undergraduate education. See it that way!

Generate your own original perspective on the above argument utilizing your understanding of the course material delivered in the initial seminars by Paul, and those by your colleagues, your study of the Chapin textbook and other background readings, your observations during the farm field trips, and relevant material from other courses. Be original and creative. Demonstrate your capacity for independent critical thinking. **Concept** - What does the word mean? An abstract idea that helps to explain or understand some phenomenon. E.g. In a recent seminar, we spoke about polyculture as a practice that works because it is based on applying the terrestrial ecosystem ecology-based niche complementarity concept. Discussing them with classmates may really help you to develop your perspectives and evidence in support or against the argument (- the latter could be REALLY interesting).

The essay (~1200 words and not more than 4 pages of double-spaced font size 12 text) should be suitable for an interested, educated, but not scientifically-trained, general public audience, and should include the following components:

a) Introduction to the argument. (~0.5 page) Outline necessary background information on the particular relevance of the argument, and why it is novel/interesting. This section should lead up to, and conclude with, a precise and explicit articulation of the argument and how you are going to support (or refute) it: “In this essay, I will argue that ecology at the ecosystem level of hierarchical organization contains unique biological concepts, and that implementation of the following three concepts in agroecosystems would significantly help many farmers to develop more environmentally sustainable crop production practices: i) concept 1; ii) concept 2; iii) concept 3.

b) Evaluation of the evidence. (~2.5 pages) Describe and evaluate ~3 clear and distinct terrestrial ecosystem ecology concepts that you think would benefit the environmental sustainability of particular agricultural practices. Be as detailed and specific as possible, and be sure to explain **the underlying science** of ***why*** you think that those concepts would be useful – this is a great opportunity to demonstrate creative and original thinking. Try to envisage and describe how your concept would actually be applied on-farm. For example, if you wish to focus on the farming practices we saw on the field trips, try and write in a way that would prompt Charlie, Charles, Bob, Chris or Titia to actually implement the terrestrial ecosystem ecological concept that you are highlighting.

c) Conclusions. (~0.5 page) Identify and discuss constraints associated with any major assumptions that have been included in your evidence, and implications/future directions that arise from your conclusion. For example, consider the other aspects of sustainability (e.g. economic, social, and scale issues), and also how you might promote your concepts among farmers that may be resistant to accepting of your ideas.

Final essays will be graded ‘blind’ by the rest of the student group (i.e. anonymous peer-review of a random selection of 10 essays per student), and by Kira and I, according to the following criteria:

1. Evidence of original, critical thinking (quality of the ideas presented in relation to the argument)
2. Development of argument (logical flow of evidence and ideas to address the argument)
3. Background reading (evidence of relevant reading, and its intelligent use in developing the argument)
4. Synthesis of ideas (evidence of bringing together related ideas to developing unifying original perspectives)
5. Writing quality (overall evaluation of how stimulating and accessible the text is for the reader)

**Please carefully study the full marking rubric which is supplied at the end of this document.**

**Preparation**  
The very broad nature of the essay argument means that it will be very easy to generate some text as an essay answer. As the marking criteria above indicate, I am looking for a lot more than that. Remember that those criteria (above) will be the basis of your grade from Kira and I, and your classmates: appropriate preparation means preparing to address each and all of those criteria.

Consider the essay argument carefully. Take some time to reflect on it, and discuss with classmates. Review all of the relevant seminar and reading material and other lab and field experiences that you have been exposed to in this course, and in other courses as appropriate. Take some time to develop thoughtful and creative ideas as evidence to support the argument. Readers (graders!) of your essay will be looking for original thinking and ideas that are substantiated by good background knowledge. Make an outline of the evidence that you will use to address the argument, and structure it as three logically-linked sections based on the components described above. Include in it any relevant references that you are intending to use in the final essay.

**Submission logistics**

Please submit hard copies of your outline essays to me by the beginning of our class on **Monday November 20th** at the latest (- no exceptions allowed without clear, formally authorized, documentation). You can include as little or as much as you want – just argument ideas and the three terrestrial ecosystem ecology concepts that you think most appropriate and powerful for that argument, maybe simple bullet points or short sections of draft text for each of the three sections above, and/or any queries you may have on which you want feedback from me. You could submit just three bullet points with those insights and how and why they would be useful, or you could submit a whole draft essay, or something in between – it is up to you, and I will make comments and suggestions on all your text, but you will only be marked on the depth and originality of thought in relation to the 3 concepts.

I will work through these outline drafts and provide feedback, and will return these by the evening of **Wednesday November 22nd**. These initial drafts will be worth 5% of your course grade and will be marked for ‘depth of thought’ (i.e. on the basis of ‘perceptiveness’ and ‘relevance’ – just like your seminar questions). Treat the outline submission primarily as a way to get feedback on your best ideas and original thinking. Please make all text double-spaced etcetera as required of your final submission (formatting details below).

Your final essay should be uploaded as a WORD (*not PDF*) document to the Assignments/Final Essay folder onQ (which will then automatically run the Turnitin software) by midnight on **Friday December 1st** at the latest (– earlier is fine!). Note that if you submit multiple times beforehand onQ, that’s no problem as only the latest version will be stored and then available to me. If you have problems with onQ for some reason, just e-mail your essay directly to me by the deadline, and we will sort it out later.

Please make sure that your identity cannot be determined from the file, so that it can be graded ‘blind’ by a random selection of 10 students from the rest of the class.  Each essay should have the grading rubric at the end of the ‘Essay guidelines’ document added as an appendix within the WORD file.  I will circulate a random selection of 10 of the final essays to all of you shortly afterwards and ask you to letter grade the essays on the basis of the marking criteria indicated above, and the guidelines below.

**Essay grading:**

In grading the essays, you should rate the performance on each aspect of the rubric by ‘yellow highlighting’ over whatever you conclude is the most appropriate text description in each section of the rubric – which is included as an appendix at the end of each essay. I anticipate that the range of grades you will assign across the group will range from C+ to A+. Note that assigning identical or very similar high grades for the whole selection of essays you have been allocated is not being fair to those whose essays really excelled – i.e. if you have some really, really good ones, then you probably should also have some B- or lower essays too.

I also want you to write 3-4 brief sentences of feedback (in a designated excel grading sheet that I will send out with the anonymized essays), indicating the particularly strong and the weaker aspects of the essay. Constructive criticism will be very helpful and much appreciated by your colleagues (- and will be circulated anonymously to them after the course). Note that there is no need to send me the highlighted rubric – that’s there to assist you as a marker in evaluating and comparing the essays. Please send me your assessment of all of the essays (in the designated excel spreadsheet I will send out with your selection of essays) as soon as you get them all completed, but definitely not later than midnight on **Friday December 8th**. On the basis of the group’s assessment of the final essays, and individual separate assessments by Kira and myself, a final mark (worth 20% of your overall course grade) will be awarded (- probably the mean of the three scores).

**Formatting requirements and recommendations:**

* Please type your draft outline and final essay in Times New Roman font size 12 and double-space the text with 2 cm margins. As indicated above, the complete text of the final essay should be no longer than 4 double-spaced pages (~1200 words).
* The essay should have a clear, interesting, original, and challenging title on a separate front page that is not included in the 4-page maximum limit, but do not add any author identity information.
* Section and subsection headings within the essay are strongly encouraged.
* All references cited in your essay should be listed in a bibliography at the end as an appendix (i.e. this section is not included in the 4 page limit). The bibliographic style used in the journal Ecology would be very appropriate.
* Figures and graphs should only be included where they provide essential background information or evidence to the argument. They should be incorporated as appendices (and so are not part of the page limit).
* Writing well is not easy, and feedback always helps. - I **strongly recommend that you have at least one friend or relative proof-read your essay** to make sure it is all clearly comprehensible.
* Academic integrity is a crucial component of university undergraduate education, and is fully described at the following website <https://www.queensu.ca/artsci/students-at-queens/academic-integrity>. Please note that any suspicion of use of artificial intelligence tools such as **ChatGPT** will be fully investigated, and if it is determined that such software was used, the essay will automatically be awarded a zero mark, in addition to other possible penalties. Furthermore, students will be required to use ‘**Turnitin**’ software prior to final essay submission. In summary, ***any*** suspicion of a breach of academic integrity in your essay will be carefully assessed, and full penalties will be applied if a breach is determined.

**Some writing tips:**

* **Thinking like a scientist.** Evidence to support your ideas and conclusions is crucial. Be sure to review the natural sciences and social sciences literature on key ideas in your essays so that you can provide comprehensive background information. For example, the databases Web of Science (via Queen’s library website) and Google Scholar are both helpful (and different).
* **Citing evidence.** Your most important and central ideas and statements that are critical parts of the evidence supporting your argument should normally be based on cited evidence from the primary natural and social sciences literature. Make sure to describe the most important of those cited studies (i.e. your best evidence to support each concept) in sufficient detail that the reader can understand the essential fundamentals of how the study was done, and the data collected, and the results interpreted without having to search out the actual reference (e.g. use 2-4 full sentences for each study).
* **Audience.** Remember that your essay is intended to be written in a way that is accessible to a broad audience... not just the class group. Be careful to define key terms that might cause confusion in the context of your essay.
* **Readability.** Make sure your writing is easy to read (- some say that is the writer’s most important job!). Your fellow classmates will be reading 10 other essays, and clarity will therefore be very important. Accordingly, you are STRONGLY recommended to have 2-3 people outside the class read your final draft to avoid any confusion in concepts, or conclusions, or lack of flow.
* **References.** Citations to blogs and website articles are acceptable but should be minimised. By contrast, citations to formally published peer-reviewed material are far more convincing to your readers. Furthermore, the peer-reviewed articles are often the original sources for good website articles etcetera, and therefore the most appropriate reference.

**Resources (for this exercise, but also for your future reference)**

Note that there are substantial resources at Queen's to help you in developing your learning and writing skills (- see <http://sass.queensu.ca/topics/> to view their online resources or to make an appointment for one-on-one tutorial assistance). Plan ahead because it can take weeks to get an appointment late in the term when things get busy. See the Writing Resources tab within the above link for access to PDF handouts with very useful sets of short guidelines on many aspects of writing including how to develop a thesis statement/essay argument ( <https://sass.queensu.ca/resources/online/thesis-statements>), how to develop an essay outline (<https://sass.queensu.ca/resources/online/outlines>), and how to structure a good paragraph (<https://sass.queensu.ca/resources/online/paragraph-structure>).

In addition, the following guidebooks on writing skills are particularly good, and may be useful to you not just for this exercise but long into the future:

* Schimel, J. 2012. Science: How to Write Papers That Get Cited and Proposals That Get Funded. Oxford University Press.
* Greene, A. 2013. Writing Science in Plain English. Univ. of Chicago
* Strunk, W. Jr. 2000. The Elements of Style (4th Edition)
* Williams, J.M. and Colomb, G.G. 2010. Lessons in Style and Grace in Writing (10th edition)
* Grogan, K. (-no relation!!). 2021. Writing Science: What Makes Scientific Writing Hard and How to Make It Easier. Bulletin of the Ecological Society of America 102:1 <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/bes2.1800>

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|  | **Weak** | **Average** | **Very good** | **Excellent** |
| **Knowledge/Understanding** - - ideas, concepts, themes, content  - synthesis/integration | - Shows minimal understanding of ideas, concepts, themes, content  - Little evidence of integration of knowledge to achieve synthetic understanding | - Shows moderate understanding of ideas, concepts, themes, content  - Some evidence of integration of knowledge to achieve synthetic understanding | - Shows considerable understanding of ideas, concepts, themes, content  - Clear evidence of integration of knowledge to achieve synthetic understanding | - Shows thorough understanding of ideas, concepts, themes, content  - Integration of knowledge to achieve synthetic understanding readily apparent |
| **Thinking/Inquiry**  - thesis statement  - analysis/interpretation  - inferences  - use of textual evidence | - Text contains no clearly stated evidence to support thesis  - Develops ideas with minimal logic and critical analysis  - Minimal inferences made  - Incorporates minimal relevant evidence | - Text contains thesis evidence that is vague and unoriginal  - Develops ideas with some logic and critical analysis  - Some inferences made  - Incorporates some well-chosen relevant evidence | - Text contains clear thesis evidence components, some of which need deeper thought  - Develops ideas with considerable logic and critical analysis  - Multiple inferences made of varying effectiveness  - Incorporates considerable well-chosen relevant evidence | - Text is focussed on clear, original and has challenging thesis evidence components that have real potential to make novel contributions to sustainability practices  - Develops ideas with a high degree of logic and critical analysis  - Highly effective inferences made  - Incorporates highly effective and well-chosen relevant evidence |
| **Organisation/ Structure**  - thesis linkage  - introduction, body, conclusion  - transitions | - Little progression of ideas  - Minimal structural organisation  - Resembles a written form of speech | -May have abrupt or illogical shifts and ineffective flow of ideas  - Some clear signs of logical organisation, but conclusion fails to address thesis adequately  - Linkages weak in many places | - Sequence of ideas generally appropriate to thesis  - Organisation supports thesis and purpose with conclusion referring directly to thesis  - Some effective transitions | - Logical flow of ideas is well-suited to thesis  - Clear introduction, body and conclusion that that together achieve a unity of purpose in relation to the thesis  - Effective transitions |
| **Application**  - language conventions  - citations, references | - Applies grammar, usage, spelling and punctuation with limited accuracy and effectiveness  - Follows required style for few citations and references | - Applies grammar, usage, spelling and punctuation with some accuracy and effectiveness  - Follows required style for some citations and references | - Applies grammar, usage, spelling and punctuation with considerable accuracy and effectiveness  - Follows required style for most citations and references | - Applies grammar, usage, spelling and punctuation with high degree of accuracy and effectiveness  - Follows required style for all citations and references |