**Essay guidelines**

The Biology of Sustainability: (BIOL 510, 2022)

The 2022 course is subtitled: **The Biology of Sustainability: Maybe our greatest need now is not more knowledge but more wisdom.**

And the principal question that the 2022 course will address is:

**Interconnectedness and impermanence: Is enhanced deep awareness of these fundamental biological principles the ultimate key to significantly advancing our species toward more sustainable living?**

**All of the course learning outcomes are relevant to this exercise in that on completion of the essay as well as the associated peer-review marking, the student should be able to:**

1. Explain and contrast the term ‘ways of knowing’ from Indigenous, Western Science and Arts perspectives, and outline their historical roots and interconnections
2. Describe the 17 United Nations Sustainable Development Goals and their unique significance, and evaluate them in the context of Indigenous values
3. Discuss and critique the strengths and weaknesses of each of the core sustainability-related arguments proposed in Robin Kimmerer’s book *Braiding Sweetgrass*
4. Formulate clear, original, challenging, and concise thematic questions from course reading materials that are likely to lead to focussed and intellectually-probing seminar group discussions, student-led seminar topics, and short essays
5. Lead a stimulating, informative and creative seminar interpreting selected material from Robin Kimmerer’s book *Braiding Sweetgrass* in the context of this course’s focal question about interconnectedness and impermanence
6. Develop and present a cohesive, original, synthesis final essay/media project on the potential value of incorporating the concepts of interconnectedness and impermanence to promote more sustainable living across our society
7. Use the learning achieved in this course to develop lasting personal solutions for coping with, and constructively responding to, the major environmental and social sustainability issues of the 21st century.

**IMPORTANT DATES:**

* **Class time for discussing this assignment:** The last 10 minutes of the seminar slot onWednesday Nov. 2nd
* **Essay outline due:** 11.30 am Wednesday, November 16th (10% of course)
* **Return of essay outline:** 5 pmFriday, November 18th
* **Final Essays due:** 12 noon Monday, November 28th (30% of course)
* **Peer marking due:** 10 pmThursday, December 8th

**Essay assignment**

The 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 for your seminars, developing an interesting focal seminar question, and doing background reading around your seminar’s core question. You will have learned a substantial amount in the process of preparing your seminar, in the interactions with the rest of the group (including the questions they presented to you), in your own post-seminar reflections, and in participating in all the other students’ seminars. For the essay, I want you to take the next step in your learning by further developing and synthesizing what you have learnt into an **interesting**, **creative** and **highly original** short essay.

Writing a high quality, concise (~1700 word) 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 – the overall goal of undergraduate education. See it that way!

**Essay exercise**

You will first need to choose or develop a precisely worded thesis argument as the central focus of your essay. Here below are some suggestions that you could use or modify as you see fit, or you can develop your own argument provided that it clearly relates to at least one of the course learning objectives (listed above). Note that you are strongly encouraged to devise your own original wording for the final exact text of your argument, but some of these ideas below may help your thinking.

1. Our greatest need now is not more knowledge but more wisdom (adapted from Dr. Robin Kimmerer).
2. We are in our current environmental situation because our left-brain metaphysics have increasingly led us down a path of short-term gratification through materialism (adapted from Dr. Leroy Little Bear)
3. By reconciling western science and indigenous ways of knowing, we can develop more effective and appropriate responses to the major environmental and social sustainability issues of the 21st century.
4. *Braiding Sweetgrass* (Kimmerer 2013) makes a critically important contribution to advancing the mindset needed for individuals to successfully cope with the sustainability crisis
5. The content theme material for the course BIOL510 2022 is inappropriate for a Bachelor of Science undergraduate program in the Department of Biology
6. Any other argument developed by you that clearly relates to at least one of the course learning objectives (listed above).

The chosen thesis argument will be the central focus of your essay. In deciding on your argument, you are strongly encouraged to consider BOTH the ‘for’ (positive) AND ‘against’ (null) versions of each of the stated arguments – That’s CRITICAL THINKING – and either version could provide a very challenging, interesting and valuable essay. After initially considering the two versions, then choose and argue EITHER ‘for’ or ‘against’ (not both) in your essay. Generate your own original perspective on the chosen argument utilizing your understanding of the course material, background reading, and relevant material from other courses. Be original and creative. Demonstrate your capacity for independent critical thinking. Discussing it with classmates and others may really help you to develop your perspectives and evidence in support or against your chosen argument.

The precise wording of the essay argument is therefore the absolute central core of your essay. It should be a single sentence describing an interesting, challenging, creative and original perspective on an issue related to this course. Each essay argument will have multiple critical words or phrases (e.g. need, knowledge, wisdom.... left-brain metaphysics, increasingly, short-term gratification, materialism....reconciling, western science, indigenous ways of knowing, personal, coping, constructively responding to...). Each and every one of such critical phrases will need to be fully explained in the main body of evidence section, and then specifically addressed in the overall context of the argument.

The essay (~1700 words and not more than 5 pages of double-spaced text) should be suitable for an interested public audience, and should include the following components:

1. Introduction to the argument. Outline necessary background information on the concepts the make up the context of your argument, 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 essay thesis argument which would be worded exactly as follows: “In this essay, I will argue that ....and then copy in the full text of whatever essay argument text you have decided on.
2. Evaluation of the evidence. Describe and evaluate the evidence including perhaps the book chapters and papers we have read in the course, your additional background reading (that may be from primary and secondary literature in the natural and/or social sciences), and perhaps including material from the course reference list to support or refute your chosen argument. Use multiple clear and concise paragraphs to present your evidence, and specific sub-sections may be appropriate.
3. Conclusions. Indicate whether the argument has been supported or refuted, how the conclusion relates directly to the introduction, constraints associated with any major assumptions that have been included, and implications/future directions that arise from your conclusion. Pragmatic, clear, even small-scale suggestions as to how your conclusions could be implemented always strengthen the appeal of an essay, and provide a great opportunity to demonstrate original thinking.

Final essays will be graded (by the rest of the student group) 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 develop 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 course themes mean 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 same criteria will be the basis for your classmates’ grading of your essay: make sure to address each and all of those criteria.

Start by devising the precise wording of an essay argument, and then take time to reflect on it. Review all of the relevant seminar and reading material that you have been exposed to in this course, and in other courses as appropriate. Readers (graders!) of your essay will be looking for original thinking and ideas that are substantiated by good background knowledge. Take some time to develop a thoughtful and creative perspective on whatever argument you choose, and look for the opportunity to refine and edit the argument wording so that it best matches your interests and the content you are planning on covering. As part of this iterative process, make an outline of the evidence that you will use to address your perspective on that argument. That outline should be structured as three logically-linked sections based on the components described above. Include any relevant references that you are intending to use in the final essay.

**Submission logistics:**

Please submit your outline essays to me at the beginning of class (11.30 am) on Wednesday, November 16th at the latest – earlier that week would be great. You can include as little or as much as you want – just argument ideas, 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. Please make all text double-spaced etcetera as required of your final submission (formatting details below). I will work through these outline drafts and provide feedback, and will return these by the evening of Friday, November 18th. These initial drafts will be worth 10% 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 – especially on the content and wording of your argument.

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) at the latest by 12 noon Monday, November 28th (i.e. BEFORE our second last class session). 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 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 all of the final essays to each of you later on that Monday and ask you to letter grade the essays on the basis of the marking criteria indicated above.

**Essay grading:**

* In grading the essays, you should rate the performance on each aspect of the rubric by 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 class 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 the dedicated excel grading sheet that I will circulate to you), 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 to them anonymously 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 attached excel spreadsheet) as soon as you get them all completed, but definitely not later than 10 pmon Thursday, December 8th. On the basis of the group’s assessment of the final essays, and my own marking, I will award a grade (probably the average of the two) which will be worth 30% of your overall course grade.

**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 5 double spaced pages (~1700 words).
* The essay should have a clear, interesting, original, and challenging title on a separate front page that is not included in the 5-page maximum limit.
* 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 5-page limit). The bibliographic style used in the journal *Ecology* would be very appropriate.
* Section and subsection headings within the essay are strongly encouraged.
* Figures and graphs should be included only where they provide essential background information or evidence to the argument. They should be incorporated as appendices (and so are not part of the 5-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>. Students will be required to use ‘Turnitin’ software prior to final essay submission. 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 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 14 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 make sure any confusion in concepts, or conclusions, and lack of flow are avoided.
* **References.** Citations to blogs and website articles are acceptable but should be minimised. By contrast, citations to formally published peer-reviewed material should be maximised because the latter will be 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 induce change/address issue- 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/references | - Applies grammar, usage, spelling and punctuation with considerable accuracy and effectiveness- Follows required style for most citations/references | - Applies grammar, usage, spelling and punctuation with high degree of accuracy and effectiveness- Follows required style for all citations and references |