**BIOL 411 Global Change Biology 2023 Group Seminar assignment**

**The 4 most relevant course learning outcomes related to this exercise are that by the end of the course the student should be able to:**

1. Explain and contrast the major global environmental issues that our civilisation faces.
2. Develop and apply an over-arching conceptual framework to identify and organize the principal interactions among the major global change issues that ramify their impacts.
3. Describe the patterns and causes of previous civilizations’ rises and falls to appraise our current global environmental predicament within an historical context.
4. Use concepts such as Progress trap, Global Planetary Boundaries, The Anthropocene, Biogeochemical linkage interactions, Deep Ecology, Socio-Ecological Stewardship, and Complex Adaptive Systems to discuss, evaluate, and critique potential solutions for individual global change issues.

This exercise is aimed at familiarizing you with how to access, synthesize and present both general and primary scientific information on a global change biology issue of your choice. Working in pairs, you will prepare and deliver a seminar introducing the global change issue, and then focusing in on some aspect of the issue that particularly interests you and your partner.

The most critical part of the whole exercise, and the key to a successful seminar, is to identify a clear and specific focus question that you and your partner would like to address. You will need to be creative and think carefully about your focus question. **Ask yourself, what is the most interesting question you can ask in relation to your chosen global change issue.** Your core seminar questionshould be constructed so that it will lead to focused, intelligent discussion that will move the seminar convenors and the audience toward some potential answer, or toward a more refined perspective on the issue/theme, or toward an even more refined question. Expect to make several iterations of your seminar question as you read about the topic and develop your thinking and understanding of the issue involved. In many ways, formulating a good, clear, concise, challenging and original question is the most difficult part of the whole exercise, but it is also the most interesting and creative part, and once achieved, should make for a very effective seminar. As you prepare, I am happy to meet with each group to help you refine your question. Please allow plenty of time (e.g. a week) for this part of the exercise.

Your ultimate goal as seminar convenors is to excite interest in your topic so that your audience will be fully engaged and keen to discuss ideas you raise, and therefore that they will leave the seminar afterwards with a much better understanding of the specific seminar question you have focused on, and how it relates to the overall global change issue you have chosen.

**Learning Objectives:**

1. Consult the general literature and devise an original and challenging seminar question that addresses some aspect of a global change biology that particularly interests you.

2. Search the primary scientific literature for a significant high quality example, 'case study', review, or conceptual framework of research on that global change biology issue.

3. Identify and evaluate the unique contribution of that research to addressing your seminar focus question.

4. Critically assess that research (positive and negative aspects).

5. Interpret the study’s conclusions in the broader context of understanding the global change biology issue.

6. Develop oral presentation skills, particularly discussion leadership.

**Seminar Exercise:**

Identify a global change biology issue that is of particular interest to you and your partner. Consult the scientific literature and synthesize the current status of that issue so that you can formulate an interesting and original seminar focus question. You may find the resources posted on the course web page including the websites and the list of highly recommended papers along with those listed in the References list (and the citations in those papers) useful as a starting point in reviewing the general global change biology literature. You need to choose a high quality ‘hard’ science paper (for examples of potentially appropriate papers see asterisked studies in the Reference list). Search the primary literature (i.e. sources that present original research data) for a relevant article that you will use as an example or ‘case study’ or review or conceptual framework to address that issue. Formulate your focus question so that you can use your literature research and seminar to make some progress toward answering it. Note that your seminar question should have a much broader focus than the individual paper. In other words, the paper will not provide a comprehensive answer to your question, but will contribute to moving us toward an answer. In essence, the paper will address some ‘drop’ in the ocean of the global change issue – but do it well, providing significant new scientific insights. You are encouraged to use evidence from other readings to supplement the seminar paper.

Make an oral presentation (that would total no more than 12 minutes for a conventional uninterrupted ‘talk’, but that will actually last much longer because it will be deliberately designed to invite multiple question and answer and discussion sections), aimed at stimulating ideas and debate. One useful strategy to achieve the interactive discussion is to structure your presentation with not just the main focus question but with 2-3 well thought-out probing sub-questions interspersed through the presentation. The presentation should be suitable for an interested public audience, and should include the following headings (which can be divided or shared among group members):

a) The global change biology issue: Introduction covering the broad issue, the scientific concepts and/or conceptual frameworks underlying the issue, and its historical context. Having supplied the background, present your seminar question - Make sure to write it up very clearly in your title page, and possibly again later. Explain why you chose that particular question.

b) Research paper introduction: Introduce the primary research study that you are using as an example. Specifically refer back to concepts presented in the initial course seminars where appropriate. Describe the study's focus by identifying and articulating the specific hypotheses that you think *were actually tested by the data* reported in the paper. This section is a particularly good opportunity to demonstrate original, creative, critical thinking.

c) Research paper results: Present a brief summary of those study results that are most relevant to addressing your seminar focus question (e.g. perhaps 1-3 of the core graphs or tables – no more). Remember that your audience have already read the paper, and that your available time is short – keep this section concise and very centered on your seminar focus question.

d) Research paper assessment: Critical assessment of the study's main results and conclusions that are relevant to your seminar question. Think like a scientist – What are the strengths and weaknesses of the study (i.e. positive and negative aspects), and what are the critical assumptions underlying the study’s data collection and/or data interpretation? This section is a particularly good opportunity to demonstrate original, creative, critical thinking.

e) Conclusions: Finish your seminar by summarizing your conclusions on the focus question you have posed. Be sure to include a synopsis of what you have learnt from your audience during the seminar as well. Providing a set of 2-3 ‘take home’ messages summarizing the above is particularly effective. Offer some evaluation of the chosen research study's contribution to advancing our understanding of the overall global change biology issue. If appropriate, be sure to outline how the chosen study points to potential solutions to the associated global change issue. Finally, consider offering some conclusions on the future importance and development of your chosen global change issue within the broader context of the course theme. This section is also a particularly good opportunity to demonstrate original, creative, critical thinking.

**Seminar convenors:**

Note that the main objective of this exercise is the process of synthesizing information on an issue, and critically evaluating a primary research source from the scientific literature. You are not expected to understand (or present) the fine detail of the results and data analyses from your chosen primary research paper. Concentrate on the main points and big issues that are most relevant to your seminar focus question. Use the **research** **paper as a ‘spring-board’ to help you address your seminar focus question**. The more interactive and discussion-based the seminar is, the better.

Seminar convenors will be graded as a group (50% of the total mark) according to the following criteria:

i) **quality of the seminar question** – clarity, focus, intellectually stimulating, creativity

ii) **development of that question** during the seminar using evidence from the chosen reading, and other sources

iii) **presentation structure and clarity**

iv) **synopsis** at the end of the seminar

Individual seminar convenors will be graded separately (50% of the total mark) on each of their presentations according to the following criteria:

v) **evidence of independent critical thinking and original ideas** (e.g. identifying the study's main results and conclusions that are relevant to your seminar question; critiquing those results and conclusions; relating them to your seminar focus question)

vi) **enthusiasm and originality in presentation**

vi) **audience engagement and discussion leadership**

Note the above very carefully - They tell you what I am looking for!

The overall question and possible readings that you are considering using for your seminar should be sent to me in time (at least 10 days prior to your seminar) so that we can schedule a meeting with each group pairing where I can assess the question and the possible papers and provide feedback. To help you prepare, and to make the meeting most effective, please see ‘Guidelines for preparing for your seminar discussion meeting’ onQ and on the website. The earlier you send your preparation materials to me, the more feedback I will be able to provide. If you are having difficulties, please contact me. Finally, note that I am very keen to support individual approaches in this course, so if you have other suggestions of how or even what material you would like to do your seminar (e.g. role plays, debate, mind maps, infographics, artwork [as long as it acts as a synopsis] …), please contact me for support/assistance.

**Seminar participants:**

The success of this course as a learning instrument will largely depend on the quality of the discussions in each seminar. The main objective is to encourage the thinking processes of identifying and assessing some of the major cutting-edge issues in global change biology that fit within the course thematic question. Initiation and participation in the discussions following each seminar is a critically important part of the learning process in this course. Please read the research paper circulated prior to each seminar, and submit a single discussion idea or question relating to the global change biology issue in general, or to the chosen research paper, or some combination of the two. For the student seminars, they have been asked to focus primarily on the hard science, but can contextualise that science at a broader level. For assistance, please consult the separate document entitled Guidelines for developing good seminar questions posted on the webpage and onQ. Your question should be submitted in Microsoft Word format to the convenors via the Course ONEDRIVE **before** the associated seminar begins – late questions will not be accepted. The questions will subsequently be graded by the convenors and the course instructor on the basis of their quality (i.e. perceptiveness/depth of thinking, originality, and relevance).

**Final task for the seminar convenors:**

After you have both given your seminar, you will have 1 week to mark the audience’s written questions.  I will circulate a spreadsheet in which you can enter the marks (out of 10) and then send to me.  Remember that the questions must have been submitted prior to the seminar, and should be marked on the basis of their quality (i.e. perceptiveness/depth of thinking, originality, and relevance).

In addition to learning how to assess and grade each other’s work, the second goal of this task is for you to learn from the ideas and questions your audience have provided to you.  Accordingly, please reflect on each of the question submissions, and write in any useful comments or responses that you think the questioner will benefit from (as ‘comments’ in the Review tab).

Finally, please consult with each other and agree your choice of the best two questions out of all the ones you got...and indicate your selection (1st, 2nd) on the marks spreadsheet when you send the questions all back to me – within a week of your seminar please.

**Important Dates:**

* Pick seminar partners and topics **as soon as possible** (first come, first served... but dates will be rapidly allotted – given the limited number of available slots for such a big class, some pair will have to be scheduled for week 4)
* Seminar Presentation on your day (25% of final course mark)
* Seminar Questions (by seminar attendees). **Send to convenors** **before** each seminar(each question contributes to 20% of final course mark)
* Graded Seminar Questions **(by seminar conveners)** due ONE WEEK after your seminar