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## Developing a Writing-Intensive Course in Animal Physiology

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# Writing Intensive BIOL3630 & 3640 Comparative Animal Physiology I & II “How Animals Work in Your Own Words” by Tomasz Owerkowicz

## Project Goals

To transform Comparative Animal Physiology into a Writing Intensive course, to train students in diverse disciplinary writing strategies, and to use writing techniques to make them better scientists and effective communicators.

## Course Description

This course aims to provide an in-depth integrative and comparative study of select physiological systems of vertebrate and invertebrate animals. Guest lectures by expert physiologists will highlight particular case studies. Experimental manipulations will be performed in the laboratory using live animals to provide first-hand experience of physiologic experiments.

## Writing Activities

- Lab report in the style of a research paper
- Essay-style midterm and final exams using realistic or imaginary scenarios
- Unique term paper based on carefully scaffolded assignments

## Diversity, Integration and Scaffolding of Writing Assignments

1. Read a research paper and write a 200-word summary/abstract. Share and compare summaries with students in your lab group. Write a joint summary for your lab group.
2. Read two research papers on the same topic, which disagree with each other. Write a popular science opinion piece on the topic that incorporates both views (point-counterpoint style), and comes out on one side of the argument. In it, make sure to explain why this topic should be of interest to the lay public.
3. After choosing your paper topic (animal+function), write a 1-2pp reflection explaining why you are interested in the subject matter. Share it with another student, so s/he can present it to the class.
4. Choose and annotate one research paper relevant to your topic. Write a one-pager on potential experiments/projects to follow up on this research.
5. Write a 2-page introduction on the natural history of your chosen animal taxon, from the perspective of how it relates to the physiologic question you will address in your term paper.
6. Choose four more research papers on the topic, and make a cross-correlation rubric showing dis/agreement on key points between them.
7. Write down key questions/ideas addressed by your selected research articles, and summarise the evidence for each of them.
8. Choose appropriate figures, which illustrate these ideas, explain what each shows (i.e., write an effective figure legend). OR make your own figure.
9. Write an exploratory essay on your topic, incorporating the questions/ideas/ approaches from the five research articles. Base your paper on good and bad examples of past student papers. Present your topic to class. Use this opportunity to incorporate feedback onto the next iteration of your paper.
10. Peer review another student's exploratory essay. Point out any errors, vagueness and/or inconsistency. (Peer review is graded.)
11. Formulate your thesis/argument, based on the exploratory essay. Write an abstract (100-150 words) to your paper, explaining its argument.
12. Revise the essay with a clear argument and informative title. Submit for instructor comments.
13. Incorporate instructor comments into a revised final draft.

## Scaffolded Assignments

## WI Student Learning Outcomes

1. Clearly explain how animals function using principles of physiology.
2. Critically analyse experiments and data to show your understanding of the discipline of physiology.
3. Learn to critique papers and argue for/against ideas, and formulate your own hypotheses, in words and diagrams/graphs.
4. Understand that effective writing is required for communicating science to the scientists and the wider public.
5. Adapt your own disciplinary writing style to different situations and purposes.
6. Use reflective writing to improve and hone your own communication skills.
7. Appreciate that good writing develops through an iterative process.

WI SLOS	1	2	3	4	5	6	7	8	9	10	11	12	13
1					X			X	X				
2	X			X		X	X						
3		X				X		X		X			
4	X		X							X	X	X	X
5		X			X						X		
6			X	X			X		X				
7	X								X			X	X