Mechanobiology Term Paper

The purpose of this paper is for you to spend time researching an area of mechanobiology that is of interest to you. It is meant to give you more depth in a particular topic that we did not have class time to further investigate and discuss. On another level, it is also meant to hone your skills in wading through all the literature out there and to create, what is in a sense, a literature review. So think about this paper as a chance to improve your writing skills, get better at journal searching, and to research something that is truly interesting to you.

The overall length of the paper should be ~8-10 pages double spaced, Times New Roman 12 point font with 1 inch margins all the way around. Your references are not included in this page limit. Please make sure that your references are properly cited using the following standard for journal articles:


The final paper is due **Friday June 5th at the end of class (10:45)** after that time it will be considered late and you will lose 10% each hour it is late until 4 PM when I will no longer accept the paper.

**Step 1: Topic selection:** I would like you to research a topic relating to mechanobiology. Some ideas are:

- Bone loss during space flight
- Bone loss of bears during hibernation
- Effect of gravity on development of butterflies
- Effect of mechanics on bone development
- Osteopetrosis
- Giantism
- Hypopituitarism
- Barefoot running
- Head carrying
- Effect of loads on tendon formation or healing
- Effect of loads on cartilage formation
- Effect of high impact sports on bone density
- Implant micromotion (focus on just one type of implant, this is a very large topic to cover)
- Effect of mechanics on fracture healing

With your topic in hand, I want you to thoroughly describe the problem/disease/topic you are researching. Summarize 4 or 5 studies that have been done on your topic with enough detail that the reviewer can understand the study, but without going into too much detail that you are just rewriting the whole paper. Write approximately 2 paragraphs for each study. After you have described what the “current state of the art” is in your topic area, discuss how this issue is being
treated/corrected/studied and the overall status of the topic, basically summarizing where the field stands and perhaps where you think it should go.

**Step 2: Article search:** For your paper, I would like you to reference 5-10 PEER REVIEWED articles on the topic. You can use search engines such as "pubmed" or "sciencedirect" to search for articles. Union may have the journal, but if not you can first search on Google scholar for the article. If you cannot find the full PDF version there, then do interlibrary loan. Reading just the abstract does not count.

**Step 3: Outline Paper:** I would like to see an outline of your paper topic by **Wednesday April 29th.**

**Step 4: First Draft:** Your first draft is due **Friday May 22nd.** You will be handing your draft off to a classmate. Your classmate will read the draft and do a review based on the paper criteria listed under “step one” and will also review grammar and references. This is what “peer review” means and this is what is done in the field. Please take this responsibility seriously when you are reviewing the paper and give constructive feedback. You need to **return the draft to the author on Wednesday May 27th.** You will also be turning in your review to me so that I can grade you on the thoroughness and constructiveness.

**Step 5: Presentation:** The last 4 classes are reserved for presentations of your paper. You have just researched an interesting topic and it would be a shame if I were the only one to read what you learned. Therefore, you will be presenting for **10 mins with 5 mins for questions.**

**Step 6: Submit final paper:** As stated above, the final paper is due at the end of the last class, which is **Friday June 5th at the end of class (10:45 AM).**

**Grade breakdown:**

Your paper is worth 20% of your final grade, but it is actually broken down further to help you along with the steps. The grade will be determined as follows:

- 5% Outline
- 20% First Draft
- 5% Peer Review
- 30% Presentation
- 40% Final Paper