BMS 3514: Organsimal (Advanced) Physiology Lab Syllabus

Laboratory Manual: Handouts that must be printed out prior to lab.

Please refer to NYU Classes for lab report format and statistical analysis help.

Lab Grade = 40% of the Final Course Grade:
- **20% Deduction will apply** to all labs handed in late (deadline is the start of the lab time)
- **If you feel you will arrive late**, please email the report to your TA and your instructor 1 hour prior to the start of the lab.
- **Please see guideline on how lab grades are derived.**

Pre-requisite:
BMS 1004/2004

Co or pre-requisite:
BMS 2512 Biostatistics
CM 1024 General Chemistry II

Lab Schedule:

1. **Week 1. Library research:**
   - Familiarize students with online library search tools;
   - Discuss proper lab report format;

2. **Point – discrimination and Lateralization:**
   - Use gearhead dividers and stainless steel rulers to measure point discrimination in different areas of the body
   - Test the hypothesis by comparing the data using statistical tests

3. **Reaction Time, Stroop Test:**
   - **Reaction Time**
     - Study the possible relationships between reaction times and other variables (example: reaction time of the left index finger is faster than that of the right index finger in left-handed individuals)
     - Test the hypothesis using statistical tests
   - **Stroop Test:**
     - Study the Stroop Effect, by recording the time students take in order to read a full Stroop test passage.
     - Test the hypothesis using statistical tests
4. **Skeletal Muscle Physiology—Computer Simulation:**
   - Understand the physiology of muscle stimulation using a computer simulated muscle under electric stimulation
   - Understand the physiology behind muscle motor unit, minimum and maximum stimulation voltage
   - Understand different types of muscle actions: single stimulation, multiple stimulation, treppe, incomplete fusion, tetanus, and fatigue.
   - Understand the variability of force in different muscle actions

5. **Frog Cardiovascular Physiology – Computer Stimulation:**
   - Understand the automaticity of the heart
   - Understand the differences between skeletal and cardiac muscle stimulate
   - Understand the effect of direct stimulation of the heart on the heart rate
   - Understand the effects of vagus nerve, cold, and heat stimulation on heart rate
   - Understand the effects of pilocarpine, atropine, epinephrine, and digitalis on the heart rate
   - Understand the effects of sodium, potassium, and calcium ions on the heart rate

6. **Blood Pressure and Heart Rate:**
   - Understand the effect of exercise, water, and caffeine on heart rate on Human subjects
   - Come up and test a hypothesis regarding caffeine and exercise factors on heart rate using statistical tests

7. **EKG and Exercise:**
   - Collect reliable data used for analysis using on human subjects
   - Study the relationship between different types of exercise and heart activity
   - Introduction to EKG equipment to visualize heart activity using iWorx
   - Interpret EKG graphs and use to obtain data for statistical analysis

8. **Respiratory and Renal Exercise:**
   - Respiratory Exercise:
     i. Analyze breathing activity using a computer program (iWorx) on human subjects.
     ii. Understand the representation of the different lung volumes
     iii. Understand the relationships between different lung volumes in relation to each other
   - Urine Analysis:
     i. Understand which compounds in the urine indicate specific health conditions using human subjects.