BI241
FALL 2017
LABORATORY EXERCISES IN
INTRODUCTORY HUMAN ANATOMY AND PHYSIOLOGY

THE INTEGRATIVE BIOLOGY DEPARTMENT
Oregon State University
<table>
<thead>
<tr>
<th>Lab</th>
<th>Week of term (dates)</th>
<th>System</th>
<th>Laboratory Topic</th>
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<tbody>
<tr>
<td>Welcome Week</td>
<td></td>
<td>No Lab</td>
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<tr>
<td>1</td>
<td>Week 1</td>
<td>Cellular Level of Organization</td>
<td>Cellular principles – organelles, diffusion, osmosis, &amp; principles of biomolecules</td>
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<tr>
<td>2</td>
<td>Week 2</td>
<td>Skeletal System</td>
<td>Anatomical organization, vocabulary; Fundamentals of the skeletal system &amp; joints; Axial skeleton</td>
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<tr>
<td>3</td>
<td>Week 3</td>
<td>Muscular System</td>
<td>Anatomical organization, vocabulary; Fundamentals of the skeletal system &amp; joints; Appendicular skeleton</td>
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<td>4</td>
<td>Week 4</td>
<td>Muscular System</td>
<td>Gross musculoskeletal anatomy of the pectoral girdle and arm</td>
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<tr>
<td>Week 5</td>
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<td>Midterm Exam</td>
<td><strong>During regular lab time</strong></td>
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<tr>
<td>5</td>
<td>Week 6</td>
<td>Muscular System</td>
<td>Gross musculoskeletal anatomy of the forearm, hand &amp; fingers; Activation of muscle: twitch, tetanus &amp; tension</td>
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<tr>
<td>Week 7</td>
<td>Peer Review</td>
<td>Veteran’s day (no classes Fri 11/11)</td>
<td><em>Attend your regular recitation. However, there will be no labs during Week 7.</em></td>
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<td>6</td>
<td>Week 8</td>
<td>Muscular System</td>
<td>Gross musculoskeletal anatomy of the lower limb</td>
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<td>Week 9</td>
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<td>Thanksgiving week – No recitation or lab; Extended open lab on Monday, Tuesday</td>
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<td>7</td>
<td>Week 10</td>
<td>Muscular System</td>
<td>Gross musculoskeletal anatomy of the head, neck &amp; trunk</td>
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<tr>
<td>Finals Week</td>
<td>No open lab</td>
<td>Comprehensive Lab Final</td>
<td><strong>NOTE: You must sign up for your final exam time!</strong></td>
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INTRODUCTION

COURSE CREDITS & STRUCTURE:
BI241 is a 2 credit course with 7 laboratories, each two hours long and each with an accompanying 1 hour recitation. This course uses human cadavers to demonstrate human anatomy and students to demonstrate human physiology. A practical laboratory midterm and final will be given during the term.

PREREQUISITES, CO-REQUISITES:
Concurrent enrollment in/successful completion of BI231.

LEARNER OUTCOMES:
1. Describe the human musculoskeletal system using specific terminology.
2. Relate the macroanatomical structures of the skeleton to their functions in bearing weight and allowing movement.
3. Describe how joints are classified using specific examples from the course.
4. Relate joint anatomy and musculoskeletal anatomy to function in terms of movements permitted using specific anatomical language.
5. Explain the physiology of muscle contraction and neural coordination.
6. Explain how joint/muscle systems are organized to influence range of motion, strength and efficiency.
7. Describe and synthesize how muscles and joints work together to create smooth and fluid motion using specific terminology.
8. Analyze and describe collected data in graphical and written form.
9. Integrate how the skeletomuscular system creates movement about joints.
10. Process course information in lab through active participation in lab exercises/activities.
11. Demonstrate mastery of course content through in class activities, quizzes, and exams.

REQUIRED TEXTS:
1. BI241 Fall 2016 Laboratory Exercises in Introductory Human Anatomy and Physiology. Available at the OSU Bookstore.

RECOMMENDED TEXTS:
   or

COURSE COORDINATOR:
Dr. Lindsay Biga, 1030 Cordley Hall. She can be reached at 541-737-3785 or by email lindsay.biga@science.oregonstate.edu. It is expected that you attempt to resolve conflicts with your instructor directly. If you are uncomfortable discussing conflicts with your instructor please
contact Dr. Biga and she will help mediate. If you have attempted reconciliation with your lab instructor and are unsatisfied, please contact Dr. Biga.

OPEN LAB:
Open lab is a time when any student of the course can come and review materials in the teaching lab (Cordley 1027). All the same policies regarding student conduct during lab apply to conduct during open lab. Open lab is staffed by all lab instructors in non-overlapping blocks so that a longer duration of time can be available for students to visit the lab. Although your individual lab instructor may not be available during the entire open lab, a knowledgeable individual will be available for your questions. Please remember that lab instructors may not engage you during open lab, but that should you have questions, you just need ask. Also, since each lab instructor may have unique teaching styles and assignments, some questions may be best asked of your specific lab instructor.

STUDENT EVALUATION:
To ensure you come to lab prepared, there may be unannounced lab quizzes covering material from previous labs or from the current week’s lab. The number of quizzes, week and material tested is at the discretion of each instructor. There will be no coordination between instructors on when quizzes will be given. Be prepared to take a quiz at the beginning of every lab.

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<th>30</th>
<th>20</th>
<th>40</th>
<th>50</th>
<th>100</th>
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<tbody>
<tr>
<td>Pre-lab quizzes</td>
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<td>Written Assignment</td>
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<td>Activities/Homework</td>
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<td>Midterm</td>
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<td>Final</td>
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<td><strong>Total</strong></td>
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<td>40</td>
<td>50</td>
<td>100</td>
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Exams: Two lab practical exams will be given during the term – a midterm in the middle of the term and a comprehensive final during finals week. These exams will be held in your normal lab room and will consist of stations around the lab where you will identify structures and answer other questions relating to lab material. Your midterm will take place during your regular lab time. FOR THE FINAL EXAM, you must sign up for a lab time. A link will be emailed to you during week 3 of the term - this is a unique link that will allow you (and only you) to register for a final exam time. All final exams will take place during finals week in the regular lab space at the times provided by the course coordinator. PLEASE NOTE - this is a special process unique to our course. Your lab instructor will provide more information. If you have questions or problems, please contact the course coordinator.

Exam questions will be either fill-in-the-blank or short answer; multiple choice, word banks, etc., will not be used. Spelling is important for correct identification of anatomical terms, thus three misspelled words will result in a loss of one point from your exam grade.

Activities: During several labs, you will perform in class activities for required credit. These activities will be due by the end of the lab. If you are not in lab, you may not be eligible for the credit. You will receive further instructions during the labs in which they are due.
**Homework:** Your lab instructor may choose to offer homework that is intended to prepare you for the course. Some labs have Pre Lab Activities already included in the lab manual. You are expected to have completed all homework and pre-lab activities prior to the start of lab. You will receive further instructions from your lab instructor regarding homework.

**Written assignment:** This is a formal writing assignment, and sentence structure, grammar, spelling, etc., will affect your grade. Please write in complete sentences, avoid contractions, and be as concise (but complete) as possible. More information about this assignment is found later in the syllabus and will be specifically articulated by your instructor.

**WHAT TO BRING TO LAB:**
- Lab Manual
- Lab coat
- Closed-toe shoes
- Long pants

**WHAT NOT TO BRING TO LAB:**
- Food, beverages in an open container, cell phones/iPods/other electronic devices that serve no educational purpose.

**ATTENDANCE:**
You are expected to be at all labs and recitations on time, and you are expected to make full use of your allotted time. Missing more than 1 lab per term may result in a significant grade penalty. Make-up labs will not be held. Open lab may be time to review lab material, but it is not a substitute for a missed lab.

If you absolutely must miss a session, it is your responsibility to notify your instructor - prior to the session to be missed - by e-mail or in person to discuss how you can learn the material you miss. It may be possible to attend another session that week, but arrangements must be made in advance through the course coordinator; most (if not all) sections are too full to accept additional students. Permission to attend an alternate lab may not be granted if your excuse is not considered acceptable by both your lab instructor and that of the lab you wish to attend. If you are allowed to attend a lab section other than your own, you are expected to participate fully in that lab (including any quizzes or in-class activities). Documentation for all absences will be required.

In the case of an emergency situation in which you are not able to give prior notice of your absence, notify the instructor as soon as possible to discuss your options.

**MISSED WORK:**
If you are late for a lab, you may not be allowed to take that week’s quiz and may be given a 0 for that quiz, if one was given. It is at each instructor’s discretion to determine his/her own policy for each week’s quiz.

Documentation for all absences will be required. If you miss (or will miss) a lab and that week’s quiz/assignment, you must discuss with your instructor your possible make up options. If you have arranged your absence in advance lab for an acceptable reason, your instructor will arrange a make-up opportunity for missed work. If you are absent for an unacceptable or non-emergent reason, you will likely be denied the opportunity for a make-up assignment. This includes the data collection week and its accompanying written assignment – if you are not in lab to collect data (for an unacceptable reason), you will be deducted 5 points on the written assignment.
It is at each instructor’s discretion to approve acceptable reasons for missing a lab or allowing make up assignments. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very unusual circumstances. Appeals to these policies must be made to the course coordinator.

**CADAVERS:**
This course uses human cadavers to demonstrate human anatomy. Every student of OSU Human Anatomy & Physiology is expected to use the cadaver for learning and formal assessment. It is essential that everyone treat the cadavers with the utmost respect. These cadavers are those of individuals who have chosen (in life) to donate their bodies so that we may all learn. Please remember this is a rare opportunity that we have been afforded and it is our responsibility to learn all we can from another’s generosity. The best way to show respect is to come prepared.

Working in an Anatomy Lab is a valuable educational experience, but is not without risk. Fortunately, good work practices and common sense can minimize the risk of injury and exposure to embalming fluid and biohazards. Examples include keeping containers closed when not directly working with specimens, not being sloppy, and consistently wearing nitrile gloves when handling cadavers or specimens. We obtain our embalmed cadavers by loan from Western University of Health Sciences (COMP-NW) which does not accept cadavers known to have pathogenic organisms. There is no transmittable blood-borne pathogen or disease risk for those working at OSU with the previously fixed cadavers or tissues. If decomposition occurs resulting in fungal, mold, or bacterial growth, the cadaver is sealed up and removed from further study.

These embalming chemicals (which have been evaluated by OSU’s Environmental Health and Safety staff) are considered hazardous at certain levels, though your exposure is minimized by ventilation in the cadaver laboratory and the cadaver storage means. Specifically, the tables housing the cadavers are equipped with down draft ventilation at levels like that in a chemistry hood. The cadaver facilities are routinely monitored by OSU Environmental Health and Safety for proper function. If you would like a complete copy of the solution contents and safety data sheets, please contact Dr. Lindsay Biga: lindsay.biga@science.oregonstate.edu. Cadavers are maintained with a wetting solution that contains alcohol, propylene glycol, water and fabric softener. The cadavers and their towels/cotton sheets should be wetted at the end of each lab using the premixed solution dispensed from the green watering cans.

Food, drink, cosmetic application and/or gum chewing in the lab or around a cadaver are inappropriate and violate the intent of Universal Precautions.

Those pregnant or intending to become pregnant should consult with their healthcare provider before working with the cadavers.

While you will not perform the actual dissections of the cadavers in lab, you will be required to work with and demonstrate your knowledge of anatomy on the prepared cadavers. In lab and on exams you will be allowed to touch and manipulate the cadavers. However, photos may not be taken of the cadavers. Please handle the cadavers with care (do not pull vigorously on muscles, nerves or blood vessels); they are to be used by all students of our course and can be damaged by inconsiderate handling.
The following personal protective equipment (PPE) is required when working with cadavers:

1. Gloves*
2. Closed-toe shoes
3. Long pants (shear tights/stockings/leggings are not sufficient)
4. Lab coat

*Gloves will be provided, students must provide own lab coat etc. Coats must be stored in the lab with student name and must be disposed of at end of term (or year for year-long students). Coats can be purchased at the OSU bookstore for ~$5.00. Those not wearing the required PPE will not be permitted to work with the cadavers and may be asked to leave the lab.

Each cadaver arrives with a metal identification (ID) tag on one toe. The ID number is the Oregon death certificate number and must NOT be removed from the toe at any time. The use of the ID number enables the COMP-NW Body Donation Program to correctly track the cadaver and also guarantee the anonymity of the donor as required by HIPAA regulations.

All body parts removed during the dissection MUST BE KEPT with the cadavers or in the sealed storage bin for return to program. Co-mingling of body parts between cadavers is prohibited. If a body part is removed to a location away from the body (such as during an exam) the correct ID number must accompany the body part so that it can be returned to its original body.

All body parts including soft tissues must be returned with the donor of origin to the COMP-NW. Cadavers or any of their parts cannot be dissociated and retained for any reason any longer than the term specified in the inter-institutional contract/intra/institutional agreement. Each donor will be inspected upon return to the program for full compliance.

Cadavers should be treated with respect at all times. Crude jokes and inappropriate handling of the cadavers are inappropriate behaviors in the anatomy lab. There should be NO image capture of any kind involving the cadavers or their parts.

Individuals concerned with use of cadavers should discuss their concerns with their instructor and the course coordinator.

You are required to acknowledge the cadaver rules and regulations as specified in the lab manual before you are permitted to work with the cadavers. You indicate your consent by signing the form located at the end of the manual and submitting it to your lab instructor.

Failure to abide by these terms will result in significant repercussions not only for individual students found in violation, but potentially for our program at large. Repercussions will include conversations with the Course Coordinator, Department Head and OSU Office of Student Conduct. Repercussions may include student removal from the class, course or series or termination of the contract between OSU and COMP-NW. Anyone with concerns, questions or to report violations regarding the above stated protocol should contact Dr. Lindsay Biga:
lindsay.biga@science.oregonstate.edu
I understand and agree to abide by all the protocols and procedures specified in the lab manual regarding cadavers:

Signed: ____________________________________________  Date: _________________

Print name: ___________________________________________

Circle one of the following: ☐ Instructor ☐ Undergraduate Teaching Intern  Student

Failure to abide by these terms will result in significant repercussions not only for individual students found in violation, but potentially for our program at large. Repercussions will include conversations with the Course Director, Department Head and OSU Office of Student Conduct. Repercussions may include student removal from the class, course or series or termination of the contract between OSU and COMP-NW. Anyone with concerns, questions or to report violations regarding the stated protocol should contact Dr. Lindsay Biga: lindsay.biga@science.oregonstate.edu
COMPUTER RESOURCES:
As a supplement to the cadavers, the interactive anatomy computer program ADAM (Animated Dissection of Anatomy for Medicine), is on each of the computers in the laboratory through a grant from the OSU Alumni Physicians Council. ADAM is an interactive software package that allows the user to peel away layers of tissue in a simulated dissection. An Interactive Physiology program is also available for assisting you with selected aspects of human physiology.

iPads are available in the lab for student use. These iPads may be used by all students of the course during lab or open lab. A form of ID will be taken when iPads are loaned to students during class or open lab.

COLORING:
As with writing notes, the act of coloring a line drawing of a particular structure provides a type of motor feedback that becomes linked mentally with the name and description of the structure. Then, once the structure and its name have been colored, you have an excellent reference plate for quick retrieval of the given anatomy. Coloring pages abound on the internet and can also be discovered in the coloring book available in the bookstore (an optional learning tool).

SPELLING:
A simple rule: it's either spelled correctly or it's wrong. Course policy on exams and assignments is three misspelled words will result in a loss of one point. On quizzes, 6 misspells will result in loss of 1 point. However, spelling error point deductions are capped at 10% of each assignment.

SAFETY:
You should note the positions of the fire extinguishers, first aid kit, and exits. If there is an emergency, there is a telephone available in the adjacent hallway. If you feel faint during the lab, please tell someone nearby and they should walk you out to get some fresh air or help you to sit if necessary. Do not leave the room by yourself. We will arrange for someone to escort you to the health center as soon as possible.

CLEAN-UP:
You are responsible for cleaning all the equipment and area used by you or your group during a laboratory. All members of the group should stay until the lab instructor has checked your work area. Trays of instruments will be provided, but it is your responsibility to ensure their proper cleaning and return. Be sure to turn off all equipment at the conclusion of the laboratory. Failure to clean up your space may result in grade penalties.

STATEMENT ON STUDENT RESPONSIBILITY FOR LABORATORY COURSES:
The following exercises were designed to best fit the requirements of demonstrating relevant biological mechanisms and principles. In accordance with this requirement, a complete learning experience may include the use of laboratory animals as a way to achieve the best education for students. The use of living and/or preserved animals gives students a direct and realistic understanding of how complex living systems are put together, an understanding that cannot be gained solely by derivative approaches such as reading a textbook, watching a video, or using a computer. In those cases where an appropriate substitute is available, we have incorporated such exercises into the course. If you have any concerns about your responsibilities in this laboratory course, you need to express your concerns to the lab coordinator before the second week of classes.
STUDENT CONDUCT AND ACADEMIC DISHONESTY:
The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society in constructive ways. Policies, procedures, and regulations are formulated to guarantee each student’s freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. In an academic community, students and faculty each have responsibility for maintaining an appropriate learning environment. Students are expected to adhere to behavioral standards that support and foster a learning environment. It is our professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. For specific regulations, please see http://leadership.oregonstate.edu/sites/leadership.oregonstate.edu/files/policies/student_conduct_2-25-15_576-15.pdf

You are expected to be honest and ethical in your academic work. Academic dishonesty is subject to the disciplinary process outlined in the OSU Student Conduct Regulations. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- Cheating – use or attempted use of unauthorized materials, information or study aids.
- Fabrication – falsification or invention of any information.
- Assisting – helping another commit an act of academic dishonesty.
- Tampering – altering or interfering with evaluation instruments and documents.
- Plagiarism – representing the works or ideas of another person as one’s own.

You will find more information on this subject at many locations on the OSU website including: http://studentlife.oregonstate.edu/studentconduct/offenses-0

STUDENTS WITH DISABILITIES:
Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

WRITTEN ASSIGNMENT:
In this course you must prepare one written assignment using data acquired in the lab. Each lab instructor will disseminate specific instructions for this assignment at the time data is collected. While you will collect data with your peers, analyze the results and discuss the material, it is required that each student submit independent work. Please ask your lab instructor or course coordinator if you are not certain as to what constitutes “independent work.”

Students are also expected to follow OSU’s regulations regarding Student Conduct and academic integrity. Please see: http://oregonstate.edu/studentconduct/ for specific regulations.

GRADING OF WRITTEN ASSIGNMENT:
Assignments are due at the time specified by your instructor; after this time, they are late. Late papers will be docked 2 points per day, and will not be accepted more than one-week after the due date. Exceptions may be made on a case by case basis at the discretion of the instructor.
If you are not in lab to collect data for an unacceptable reason, you will be deducted 5 pts on the assignment. It is at each instructor’s discretion to approve acceptable reasons for missing a lab or allowing make up assignments. Appeals to this policy must be made to the course coordinator.

Each instructor will use a specific objective means for grading the written assignment. Generally, most points will be awarded to the author’s description of the rationale for the experiment, description of methodology, presentation and interpretation of data and statements of conclusion. Some points will be awarded for overall clarity of communication both in language and data presentation. Citations are required for written assignments and you will also be required to submit a copy of your written assignments using TurnItIn. Your assignment content will be checked against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. TurnItIn generates a report that highlights any potentially unoriginal text in your paper. Instructors will enable you to submit initial drafts through TurnItIn so you can receive the report, allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. You will retain all rights to your written work. Failure to cite sources will result in loss of points and may be investigated for violations of the Academic Dishonesty policy. Written assignments (final copies) not submitted to TurnItIn will not be graded.

Remember, while you will collect data with your peers, analyze the results and discuss the material, it is required that each student submit independent work (ex: writing assignment alone to explain concepts/content in your own words). Please ask the lab instructor or course coordinator if you are not certain as to what constitutes “independent work.” Students are also expected to follow OSU’s regulations regarding Student Conduct and academic integrity. More information about TurnItIn: [http://Canvas-transition.oregonstate.edu/sites/Canvas-transition.oregonstate.edu/files/handouts/turnitin_faqs.pdf](http://Canvas-transition.oregonstate.edu/sites/Canvas-transition.oregonstate.edu/files/handouts/turnitin_faqs.pdf)

**DATA TREATMENT IN WRITTEN ASSIGNMENTS: MAKING FIGURES & TABLES**

Figures and tables are wonderful ways to convey data in a concise and visual form. Sometimes, complicated information is difficult to understand and needs an illustration. Graphs or charts can get your point across quickly and visually. In this course, you will be required to constructs graphs, although you may choose to include data tables as well.

Is it a figure or table?

- Figures: pictures, graphs, diagrams, anything that is not a table
- Tables: categorized data in list format

**Steps to making a table:**

1. Determine the purpose of the table. What are you trying to show?
2. Tables are best made in either MS Word or Excel and include a descriptive title (placed above table), as seen here:

<table>
<thead>
<tr>
<th>Social situation</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Solitary (n = 25)</td>
<td>13.6 + 6.6</td>
</tr>
<tr>
<td>Social a (n = 25)</td>
<td>101.9 + 88.5</td>
</tr>
</tbody>
</table>

*Two or more individuals
How to properly construct graphs:
• Dependent and independent variables on correct axes
  o Independent variable: x-axis
  o Dependent (response) variable: y-axis
• Label your axes
  o Use proper units and scaling
• Include a legend or key when including multiple distinct data sets
• Use averages rather than raw data to demonstrate general trends in the data set

An independent variable is the variable that stands alone and isn't changed by the other variables you are trying to measure. Independent variables are also called “predictor variables” because they affect the other variables that you are measuring but are not affected by them. These variables that are affected by the independent variable are called dependent variables.

A dependent variable is something that depends on other factors. For example, a test score could be a dependent variable because it could change depending on several factors such as how much you studied, how much sleep you got the night before you took the test, or even how hungry you were when you took it. Usually when you are looking for a relationship between two things you are trying to find out what makes the dependent variable change the way it does.

For example:
“Time spent studying” causes a change in “test score”. So “Time spent studying” predicts what happens to “test score”. That means that “Time spent studying” is the independent variable, and “Test score” is the dependent variable because it is determined by “Time spent studying”.

Writing graph titles:
• Titles should be a brief description that orients the reader to the result
  o Descriptions should enable to reader to understand the results without reading your report
• Location, location, location
  o Graph titles belong below the graph
  o Table titles belong above the table
• All titles should be grammatically correct and spell checked

Referencing your graphs in your text:
• In the text of your summary, refer to your graph to illustrate trends in your data
• The reader should be able to understand your results without having to look at the graphs
• Use appropriate methods for referring to your graphs like shown here in the examples:

Examples of how to reference your graphs:

“Generally, there was a higher exam score in the students who studied more hours per week (Fig. 1).” – OR – “Figure 1 demonstrates the positive relationship between the more time spent studying per week and a higher exam score.”
Steps to making a line graph:
1. Determine the purpose of the graph. What are you trying to show?
2. Choose the scale to be used. The message conveyed by a graph can be greatly altered by changing the scale of one axis in relation to the other. The scales should be adjusted to produce a figure that fits on the page and which best illustrates the trend of your data.
3. Plot the data on your axes and then draw either a line/curve to best fit the data points or a connecting line to connect the points laterally. Trends are usually more clearly demonstrated using a "best fit" line or regression.
4. Formulate the title and label the axes. Be sure to include correct units.
5. Add the remaining elements as described above.

Line Graph break down:

Figure 1. Time spent studying (hours/week) among college students and exam score (percentage) in one upper division science course.
Steps to making a bar graph:
1. Determine the purpose of the graph. What are you trying to show?
2. Choose the scale to be used. The message conveyed by a graph can be greatly altered by changing the scale of one axis in relation to the other. The scales should be adjusted to produce a figure that fits on the page and which best illustrates the trend of your data.
3. Bar graphs can be used to show how something changes over time or to compare different times. Bar graphs are good for plotting data that span many years (or days, weeks . . .), have really big changes from year to year (or day to day . . .), or they can be used for comparing different items in a related category (for example: comparing something between different states).
4. If the bar graph represents a measure of center (such as a mean), they must contain a measure of the spread (e.g., variance or standard deviation) of those data – usually represented by error bars. Graphs of means lacking error bars are useless, and will be graded as such.
5. Formulate the title and label the axes. Be sure to include correct units.
6. Add the remaining elements as described above.

Bar Graph Break Down:

Legend/Key

Independent variable, with units

Dependent (response) variable with units labeled

Error bar

Appropriate scaling & labels

Figure 2. Mean grooming duration in males and females during either solitary or social situations. Error bars represent standard deviation.

Prepared using material from http://nces.ed.gov/nceskids/createagraph/
CITATIONS IN WRITTEN ASSIGNMENTS & USE OF TurnItIn IN BI241, BI242, BI243

TurnItIn is a plagiarism prevention tool available in Canvas. It is best used as an instructional tool to help students learn proper citation of sources to improve their writing. It is not intended as a tool to “catch” students plagiarizing, though it is very able to do so.

All written assignments for Introduction to Human Anatomy and Physiology (BI241, BI242, BI243) will be submitted using the TurnItIn plagiarism prevention service through Canvas. Students will submit their assignments by uploading a digital copy of their written work through their lab instructor’s Canvas Assignment tab and they may also submit an identical paper copy to their lab instructor for grading. The digital assignment will be checked for potential plagiarism against Internet sources, academic journal articles, and papers of other OSU students. TurnItIn generates a report that highlights any potentially unoriginal text in student papers. Papers submitted through TurnItIn for this or any class will be added to the OSU TurnItIn database and may be checked against other OSU paper submissions. Students will retain all rights to their written work. More information about TurnItIn can be found at: http://Canvas-transition.oregonstate.edu/sites/Canvas-transition.oregonstate.edu/files/handouts/turnitin_faqs.pdf.

How TurnItIn works
- Instructors create TurnItIn assignments in their Canvas courses (under the Assignments tab of Canvas); students submit papers to these assignments, very much like using the Assignment tool.
- The documents the students submit are checked against TurnItIn’s databases of source material to see if any text in the student paper matches text in the TurnItIn system, including other TurnItIn papers that were submitted by OSU students.
- The papers are then delivered to instructors in Canvas together with originality reports, which display the results of the matching process.
- If instructors make the originality reports visible to students, the student can access the reports from their My Grades area of Canvas to check for potential sources of plagiarism.

In the Introduction to Human A&P labs, instructors will establish the ability for students to first upload their written assignments as a draft. By allowing a first draft submission, students can generate and view their originality report and then make proper corrections (or ensure proper citation) without penalty. The second final submission will be the one graded for credit (students will also submit a paper copy to their lab instructor for hand written grading). Written assignments will not be graded unless a final copy is also submitted to TurnItIn.

Avoiding plagiarism begins with proper citations. How to properly cite sources in Human Anatomy and Physiology labs:
In the discipline of experimental physiology, we make predictions based on known information, design an experiment, perform the experiment and gather data, report the results and draw conclusions. We do the same in our teaching labs and we ask students to write introductions and conclusions that restate known background information about physiological systems. When students write background information from known sources, it is important to properly reference (cite) the source of such information (the most commonly used sources will likely be our course textbook and lab manual, although primary literature or appropriate on-line sources may also be used). Depending on the nature of the source material, different types of citations will be
required. In the text of student written assignments, each source should be given a number near the referenced information (starting with 1). At the end of the document a Cited Works list must contain all cited sources. For example, if information was obtained from the lab manual, it should be cited follows:

“Several hormones act upon the kidney, although some are more rapid than others. ADH is released from the hypothalamus and its action is very rapid, occurring within minutes of release. In contrast, aldosterone (from the adrenal gland) can take as long as two hours for action to occur (1).”

Cited Works

Even if information is not quoted word for word, you must cite the source from which it was obtained. It is very important that as you write your assignments you keep a running list of the sources you have used. Avoid unintentionally representing someone else’s work as your own.

For specific information as to the proper format for citing books, articles or websites (and many other types of sources), please use this site: http://bcs.bedfordstmartins.com/resdoc5e/res5e_ch11_s1-0003.html

Students with questions about proper citation should consult any Human A&P lab instructor or Dr. Biga. It is our goal to prevent unintentional acts of academic dishonesty and to educate our students as to our discipline specific code of ethics and honesty. Any issues of academic dishonesty will be handled by Dr. Lindsay Biga according to OSU’s guidelines for student conduct: http://oregonstate.edu/studentconduct/code/index.php#acdis. Any questions or concerns students may have regarding the use of TurnItIn in the Human A&P lab should be brought to Dr. Biga (lindsay.biga@science.oregonstate.edu).

Checklist for submitting written assignment
- Write assignments independently of lab partners using rubric given by lab instructor (write alone).
- Cite sources of information in written assignment.
- Include Works Cited list at end of written assignment (does not count towards page limit established by lab instructor)
- Submit draft version of written assignment to lab instructor’s BB site (Assignments tab, Draft “Written Assignment X”)
- Wait for originality report to be generated (can take hours if demand in high)
- Review originality report for failure to cite sources.
- Make corrections for citations (as needed).
- Submit final written assignment electronically to lab instructor’s BB site (Assignments tab, Final “Written Assignment X”)
- Submit printed copy of written assignment to lab instructor for hand grading by deadline.
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