INVERTEBRATE BIOLOGY

BIO 3020[-001] (LECTURE) - BIO 3060[001-002] (LAB)

Instructor Information
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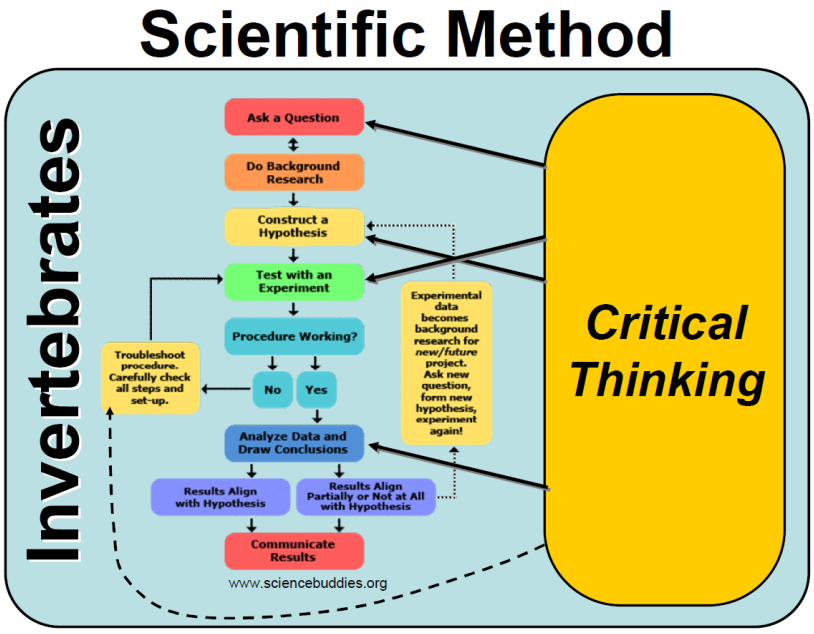
Office hours: TH 9:30 - 10:30 AM, 226 Long Hall (previous appointment)

Class meeting times

Lecture:	**Tuesday & Thursday 8:00 - 9:15 AM, Jordan G033**
Laboratories:	**(001) Wednesday 12:30-3:20 pm, 305 Jordan.**
	(002) Thursday 12:30-3:20 pm, 305 Jordan.

In short: **in this course, we will learn about invertebrates, a species-rich group of multi-cellular animals that lack a backbone and exhibit impressive morphological, behavioral, physiological, and ecological disparity. Perhaps more importantly, I will expose you to the scientific method and you will learn to think critically. We will be using various invertebrates as examples to improve your critical thinking skills.**



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Course Topical Outline

The 'invertebrates' represent a species-rich and morphologically diverse group of metazoan animals. These animals without a backbone are also recognized for their impressive disparity in terms of habitats and lifestyles. For instance, many species from numerous phyla have established symbiotic interrelationships with other marine and terrestrial animals and plants in shallow tropical seas and/or humid tropical terrestrial forests. Many other species inhabit unique chemoautotrophic environments in the deep sea. Even other species have conquered semi-terrestrial, fresh-water and terrestrial environments inhabiting deserts, mountains, plains and forests at almost all latitudes. All species that have colonized dissimilar environments show varying but remarkable degrees of specialization to their habitats. 'Invertebrate Biology' is an introductory course to the form, function, integrative ecology and evolution of animal biodiversity that focuses in organisms lacking a backbone.

This course has three general topics: (1) *Form and Function*. What are the most important invertebrate phyla?, how they can be classified and differentiated from each other?, and what is the relationship between anatomy/morphology and function so that they can cope with the challenging environments in which they are found? (2) *Evolution*. How did all of this diversity in terms of form and function arise? (3) – *Ecology, Preservation & Conservation of Invertebrates*, and their relevance to humans. In the lecture part of this course, we will explore invertebrate morphology using a comparative framework and we will describe their integrative ecology/biology (e.g., behavior, physiology, life history) to reveal the putative evolutionary pathways that have lead to their diversity and success in the different environments they are found. In the laboratory, we will examine live and preserved specimens so to reveal their phylogenetic history.

Clemson Thinks^2

This course is now part of the Clemson Thinks^2 (CT^2) critical thinking experiment, a program aimed at improving student critical thinking skills. Simple memorization of facts and repetition of definitions is not a sufficient skill set to address the complex problems our world faces today! **As a Clemson undergraduate, we expect you to develop the ability to think critically and to evaluate how knowledge is constructed and the assumptions underlying such knowledge**.

Critical thinking is reasoned and reflective judgment applied to solving problems or making decisions about what to believe or what to do. Critical thinking gives reasoned consideration to defining and analyzing problems, identifying and evaluating options, inferring likely outcomes and probable consequences, and explaining the reasons, evidence, methods and standards used in making those analyses, inferences and evaluations. Critical thinking is "*skeptical without being cynical, evaluative without being judgmental, and purposefully focused on following reasons and evidence wherever they may lead*". Please, visit https://www.insightassessment.com/FAQ/FAQs-General-Critical-Thinking/What-is-Critical-Thinking for additional information. Also. you can find more information on the CT^2 program at **http://www.clemson.edu/assessment/thinks2**/.

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Student Learning Outcomes

- Analyze taxonomies and infer systematic relationships among extant invertebrates.
- Explore invertebrate form and function to evaluate their relevance in natural ecosystems.
- Explore invertebrate lifestyle and life cycle to evaluate their importance in human disease
- Interpret quantitative relationships in manuscript graphs and tables.
- Explain the limitations of correlational data published in scientific papers.
- Analyze data to identify and summarize problems as part of the scientific method.
- Integrate information/data to solve a problem as part of the scientific method.
- Develop and justify one or more than one hypotheses.
- Identify the limitations of one or more than one hypotheses.
- Identify alternative interpretations of the data or observations.
- Evaluate competing interpretations, explanations, evidence, and conclusions.
- Effectively communicate complex ideas.

Critical Thinking Assessment and In-Class Participation Activities (*ICPA*- CT^2)

First, you might be assessed by the CT^2 program through the application of a 'pre-course' test (California Critical Thinking Test) which will assess your initial critical thinking status and a second 'post-course' follow-up test to measure the difference. Dates for taking the pre- or post-course tests will be announced by the instructor during the semester.

Then, throughout the semester, there will be announced in-class activities (see below) during the lecture period worth 100 points towards your final grade (= 10% of your final grade combined). At least two of these in-class activities include the discussion of a scientific paper that will be provided to you with a week of anticipation each time. The different papers will be presenting information on specific attributes of particular species of invertebrates (e.g., behavior, negative effect on humans, etc). **During the activities, you will be exposed to the scientific method and critical thinking**. I will lead the discussion so that you can: i. identify, develop, and/or justify one or more than one hypothesis covered in the paper you read, ii.. identify the limitations of one or more than one hypothesis proposed in the paper, iii. understand experimental design and its different components to test one or more than one hypothesis, iv. evaluate competing interpretations, explanations, evidence, and conclusions related to the experiment described in the paper, and v. identify alternative interpretations of the data or experimental observations. The activity will also allow you to vi. integrate information/data to understand and solve a problem, and vi. effectively communicate complex ideas. Those students absent for the *ICPA* will receive zero points. **You need to read the paper and participate to perform well in the in-class activities.**

Important: There will be no opportunity to make up missed ***ICPA*- CT^2**. In the case that a student misses an ***ICPA*- CT^2** and has a University- and instructor- approved excuse **in advance**, the student will be excused from that ***ICPA*- CT^2** and scores will be prorated.

If the instructor is more than 15 minutes late for lecture without notice, students may leave without penalty.

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Required* - Lecture Text - *Required - Mandatory

Brusca et al. (2016) Invertebrates - Third Edition. Sinauer Associates.

This book is extremely useful and detailed. All exam material will be taken from the lectures, the book above, and non-textbook assigned readings.

You need a **dissecting kit** for laboratory activities (i.e., dissections, etc). Dissecting kits can be purchased from the Clemson University bookstore. Alternatively, you can purchase a similar dissecting kit online (e.g., Amazon, Carolina Supply, etc). You also need a Lab Notebook (it may not be available at the bookstore). Also, you need to use typical proper protecting attire during lab hours.

Lecture Grading

Final Lecture Grade: total nº of points earned out of a maximum of 1000 points.
Scale: 900-1000 = A, 800-899.9 = B, 700-799.9 = C, 600-699.9 = D, <600 = Failed

Important Note: Grades will not be rounded up. Thus, the above are hard cutoffs.

Important Note: **You need to bring a white paper to every lecture**

Lecture grades will be based on three ~55-minute exams, one final exam, and five (or more) class participation activities.

The breakdown of points is described below. You will be expected to understand all material presented in lecture, recommended book, and assigned outside readings.

Important: There are no make-up exams given in this course without a University- and instructor-approved excuse. **Considering time constraints, you may be required to take your makeup exam in a different format (e.g., oral exam) in the case you miss a lecture exam and have a University approved excuse.**

Important: **It is mandatory that you take all four exams**. The lowest of the first three exam grades will be dropped. **The final Exam IV grade cannot be dropped**.

Exam I 300 pts
Exam II 300 pts
Exam III 300 pts
Exam IV 300 pts
Class participation (5 @ 20 points each) 100 pts
Total points for lecture **1000 pts**

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Lecture Exams

Each lecture exam will cover **all** of the material presented since the previous exam **plus** most material presented since the start of the course. The above, considering that many terms and concepts in the first lectures (e.g., Patterns & Processes) do carry over from segment (lecture/book chapter) to segment (lecture/book chapter).

Each exam will consist of one or all of the following:
1. Multiple-choice questions,
2. Diagrams / Problems,
3. Short questions & answers
4. Essays

In-Class & Off-Class Participation Activities (*ICPA*)

Throughout the semester, there will be unannounced in-class activities (6 [or more] in total) during the lecture period worth 100 points towards your final grade (= 2% of your final grade each, 10% of your final grade combined). These activities may include taking a quiz, working problems, discussing issues, guest lectures and/or participation in departmental seminars. Those students absent for the *ICPA* will receive zero points. **You need to read the different chapters of Brusca et al. with anticipation to perform well in the in-class activities.**

Important: As with your exams, the top five *ICPA* grades will be counted towards the final grade. The lowest grade will be dropped.

There will be no opportunity to make up missed *ICPA*. In the case that a student misses an ICPA and has a University- and instructor- approved excuse **in advance**, the student will be excused from that *ICPA* and scores will be prorated.

Important: **Honor students will develop extra activities during the semester**. **These activities will be discussed with the instructor at the beginning of the semester. Activities include the production of two artifacts: one video and one poster.**

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LECTURE SCHEDULE

IMPORTANT NOTICE: *topics and order are subject to minor / moderate change*

Date	Chapter	Topics	Presentation File
Jan 9 (Thu)	Ch. 1 - 4	Patterns, Processes, Concepts	Patterns_1
Jan 14 (Tue)	Ch. 1 - 4	Patterns, Processes, Concepts	Patterns_2
Jan 16 (Thu)	Ch. 5 - 7	Protista, Porifera	Protista / Porifera
Jan 21 (Tue)	Ch. 5 - 7	Porifera and Mesozoa	Porifera
Jan 23 (Thu)	Ch. 8	Mesozoa & Cnidaria	Cnidaria_1
Jan 28 (Tue)	Ch. 8	Cnidaria	Cnidaria_2
Jan 30 (Thu)	Ch. 8 & 9	Cnidaria & Ctenophora	Cnidaria / Ctenophora
Feb 04 (Tue)	Ch. 1 - 9	Exam I Catch Up, Remarks, Review	All of the above
Feb 06 (Thu)		**Exam I**	
Feb 11 (Tue)	Ch. 10	Ctenophora & Platyhelminthes	Platyhelminthes_1
Feb 13 (Thu)	Ch. 10 - 11	Platyhelminthes & Nemertea	Platyhelminthes_2
Feb 18 (Tue)	Ch. 11 - 12	Nemertea & Blastocoelomates	Nemertea / Blastocoelo
Feb 20 (Thu)	Ch. 12	Blastocoelomates	Blastocoelo
Feb 25 (Tue)	Ch. 13 - 14	Annelida & related	Annelida_1
Feb 27 (Thu)	Ch. 13 - 14	Annelida & related	Annelida_2
Mar 03 (Tue)	Ch. 1 - 14	Exam II Catch Up, Remarks, Review	All of the above
Mar 05 (Thu)		**Exam II**	
Mar 10 (Tue)	Ch. 13 - 14	Annelida & related	Annelida_3
Mar 12 (Thu)	Ch. 15 - 16	Annelida related & Arthropoda	Crustacea_1
Mar 17 (Tue)		**Spring Break - No Class - No Lab**	
Mar 19 (Thu)		**Spring Break - No Class - No Lab**	
Mar 24 (Tue)	Ch. 15 - 16	Mollusca	Crustacea_2
Mar 26 (Thu)	Ch. 15 - 16	Mollusca, Lophophorates	Crustacea_3
Mar 31 (Tue)	Ch. 17 - 19	Arthropoda: special ref. Crustacea	Arthro_1
Apr 02 (Thu)	Ch. 20	Arthropoda: special ref. Crustacea	Mollusca_1
Apr 07 (Tue)	Ch. 1 - 19	Exam III Catch Up, Remarks, Review	All of the above
Apr 09 (Thu)		**Exam III**	
Apr 14 (Tue)	Ch. 20	Arthropoda: Others	Mollusca_2
Apr 16 (Thu)	Ch. 20 - 22	Equinodermata	Mollusca / Echinoderm
Apr 21 (Tue)	Ch. 20 - 22	Equinodermata	Mollusca / Echinoderm
Apr 23 (Thu)	Ch. 22 - 23	Hemichordates & Chordates	Echinoderm / Deutero
Apr 27 - May 1	Exact date: TBA	**Exam IV - FINAL** **Friday 7:00 to 9:30 PM**	All of the above

Laboratory Grading

Final Laboratory Grade: total nº of points earned out of a maximum of 1000 points.
Scale: 900-1000 = A, 800-899.9 = B, 700-799.9 = C, 600-699.9 = D, <600 = Failed

Laboratory grades: Based on **two practical exams** and completion of **a cumulative laboratory notebook** that you will add to throughout the laboratory course.

There are **no** make-up labs given in this course due to logistic (e.g., specimen availability) and time constraints. If you miss a lab, there will be no opportunity for makeup. If you have a University- and instructor-approved excuse, and if the lab is excused before (or, in case of unavoidable circumstances, immediately or as soon as possible after) the lab, your grade will be determined by a pro-rated point total from the rest of the laboratories you attended. You are expected to attend and participate in the laboratory activities each and every week and you must turn in your in-class assignment before leaving lab. If you miss lab or leave lab early without turning in your in-class assignment you will receive a zero for that lab. If you know you will have to miss your regularly scheduled lab, but are able to attend another lab section, you must ask the instructor and both TAs in advance for approval.

Laboratory Practical Exams (2 @ 188): 376 pts
Lab Notebook (12 labs @ 52 pts): 624 pts

Total points for laboratory: **1000 pts**

Lab Notebook

A lab handout will be posted the evening or night before each lab. This handout will contain the list of activities that can be done in the lab that day. Print the handouts and bring them to the lab. Some activities are mandatory (they need to be logged in your notebook) while others are not (they are optional).

Lab activities will include a combination of drawings of the external and/or internal anatomy from prepped specimens (including permanent slides), and/or from specimens you dissect yourself; observations on behavior; data and write-ups from short (including virtual) experiments; and notes on field trips, movies, or short guest presentations.

For each anatomy activity you will draw both the external and internal anatomy of each specimen and label, at a minimum, all the structures listed in your laboratory handout. You will be graded on neatness, accuracy and completeness.

For each predominantly experimental (including virtual) lab, you will be required to write up data results and a discussion for inclusion in your notebook. Further details will be given during each lab period.

Lab notebooks will be graded based on how well you complete each of the required laboratory activities. There will be optional activities in each lab, and including these optional activities in your notebook is encouraged and can (if they are completed correctly) make up for some of the points lost from required activities. Make sure to interact frequently with your TA and instructor and ask for feedback on your notebook if you are uncertain as to how to complete an activity.

Remember. There can be no makeup labs during this semester. Thus, we will try to set up a time each Friday (or a different day of the week, pending space availability) when you can come in and study for the practical exams and work on any activities that you were unable to complete in lab. Also, and importantly, we encourage you to work on previous labs if you have time in a regular lab period as long as the material is still available. Because of space and materials issues, some lab activities will not be possible on Fridays (or a different day of the week, pending space availability). Work done on Fridays (or a different day of the week, pending space availability) will not substitute for missed labs unless your absence from lab was excused in advance by the instructors.

If due to catastrophic or unavoidable events you must miss a lab and you have a University- and instructor-approved excuse, submitted in advance, your grade will be prorated over 11 labs instead of 12. If you miss a lab without instructor approval, your grade for that lab will be a zero.

Notebooks will be turned in twice for grading; once early in the semester, and once at the end. After an assignment has been graded, that assignment **cannot** be revised and re-graded.

Lab Practical Exams

There will be two laboratory practical exams that will focus on your knowledge of both anatomy and taxonomy. These practical exams will involve rotating among 10-20 stations of labeled specimens. Each station will have 2-3 questions. You may be asked to identify: Kingdom, Phylum (or Subphylum), Class (or Subclass), Order, or other lower taxonomic level/unit, life history stage, external anatomy, internal anatomy, habitat **or any other question** regarding the specimen. In certain cases, identification of species by scientific name will earn you bonus points (when properly written) on some specimens.

LABORATORY SCHEDULE

IMPORTANT NOTICE: *topics and order are subject to minor / moderate change*

WEEK	Laboratory	Topics	Main Activities
Jan 9 (Thu)	NO LAB		
Jan 15 (Wed) Jan 16 (Thu)	Laboratory 01 Laboratory 01	Microscopy, Phylogenetics, Protista	Protista: Diversity Taxonomy, Microscopes Phylogenetic Trees
Jan 22 (Wed) Jan 23 (Thu)	Laboratory 02 Laboratory 02	Porifera	Porifera: Diversity
Jan 29 (Wed) Jan 30 (Thu)	Laboratory 03 Laboratory 03	Cnidaria	Diversity Dissection: Anemone
Feb 05 (Wed) Feb 06 (Thu)	Laboratory 04 Laboratory 04	Development	Embryonic development Diversity
Feb 12 (Wed) Feb 13 (Thu)	Laboratory 05 Laboratory 05	Platyhelminthes & Nemertea	Diversity
Feb 19 (Wed) Feb 20 (Thu)	Laboratory 06 Laboratory 06	Allometric Growth & others ***Academic Continuity Exercise***	Diversity Dissections
Feb 26 (Wed) Feb 27 (Thu)		***Laboratory Practical***	***Laboratory Practical***
Mar 04 (Wed) Mar 05 (Thu)	Laboratory 07 Laboratory 07	Blastocoelomates	Diversity Dissections (2)
Mar 11 (Wed) Mar 12 (Thu)	Laboratory 08 Laboratory 08	Annelida	Math/Stat exercise
Mar 18 (Wed) Mar 19 (Thu)		**Spring Break - No Class - No Lab** **Spring Break - No Class - No Lab**	
Mar 25 (Wed) Mar 26 (Thu)	Laboratory 09 Laboratory 09	Mollusca & Lophophorates	Diversity Dissection
Apr 01 (Wed) Apr 02 (Thu)	Laboratory 10 Laboratory 10	Field Trip (Collecting & Studying)	Field trip (on-Campus)
Apr 08 (Wed) Apr 09 (Thu)	Laboratory 11 Laboratory 11	Arthropoda	Diversity Dissection
Apr 15 (Wed) Apr 16 (Thu)	Laboratory 12 Laboratory 12	Equinodermata, Hemichordates & Chordates	Diversity Dissection
Apr 22 (Wed) Apr 23 (Thu)		***Laboratory Practical***	***Laboratory Practical***
Apr 27 - May 1			

How to Perform Optimally in BIOSC 3020/3060

How to Perform Optimally in Lecture

1. Classes are not mandatory. However, if you come to classes, you will have the opportunity to participate in several in-class activities. Combined, these activities are worth 10% of your grade. These points are there to help you!

2. Remember to download the lecture PowerPoint files (outline format) from Canvas before class. I recommend printing the lecture outline files and bringing them to the classroom. You will need to fill in drawing labels and lecture bullet points. It is important that you take notes during lectures either in the margins of the lecture outlines or in a separate notebook (both strategies work). It will be difficult for you to follow up/understand the material if you do not put attention during lectures and you simply download the lecture outline files and fill in the blanks. As a consequence, your performance in the exams will be deficient. Concentration and attention during lectures is really important.

3. Make sure to attend the in-class review session the period before each lecture exam. During these review sessions, I will be highlighting the information that I believe is really important for you to understand and that I expect you to learn well and be clear about before each exam.

4. Remember that there are going to be pre-lecture quiz questions. Be sure to answer all of these; they will be valuable preparation for the exams.

How to Perform Optimally in the Laboratory

1. Remember to download the lab handouts from Canvas before each lab. I recommend printing the handouts, reading them in advance, and bringing them to the laboratory.
2. Listen carefully to and take notes during your TA's pre-lab lecture.
3. Make sure to accomplish all obligatory activities indicated in the pre-lab lecture and lab handouts. Work concentrated at your own pace but also collaborate with others. During dissections, it is quite helpful to compare your specimen and dissection to others'.
4. Come to the open-lab (if we are able to execute them, to be announced) and review-lab periods to review/complete your work and add to your notebook.
5. Draw the best you can and label all drawings. Be prepare to answer all questions (meaning, study before the lab), and ask questions that you have not been able answer yourself after completing your own research.
6. At the end of each lab, before leaving, review and quiz yourself about all the activities you have accomplished (e.g., specimen identification, general morphology, anatomy). If you have extra time, go back and review previous labs.

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Instructor Statement on Attendance Policy

Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless the instructor contacts students. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather related cancellation.

Instructor Statement on Accessibility

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to a class should let the professor know, and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing studentaccess@lists.clemson.edu, or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: https://www.clemson.edu/academics/studentaccess/.

The Clemson University Title IX (Sexual Harassment) statement

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is also located at http://www.clemson.edu/campus-life/campus-services/access/title-ix/. Ms. Alesia Smith is the Clemson University Title IX Coordinator and the Executive Director of Equity Compliance. Her office is located at 110 Holtzendorff Hall, 864.656.3181 (voice) or 864.656.0899 (TDD).

Academic Continuity Plan for This Course

In the event the physical classroom facility becomes unavailable, as determined by the University's administration, class will be conducted in a virtual (online) format. The University issues official disruption notifications through email /www /text notification/social media. When notified, use one of the following links to navigate to Clemson Canvas where you will find important information about conducting class:

- Primary access link: www.clemson.edu/canva
- Secondary access link, if needed: https://clemson.instructure.com/
- You can also use the Canvas Student App.

On E-Learning Day, Feb. 19, 2020, a real-time test of the Academic Continuity Plan will be conducted. For further information, see the Academic Continuity Guide at https://clemson.app.box.com/s/8kpa22p36dvwavecr6avbfcykeeflmeo, and the Academic Continuity webpage http://www.clemson.edu/online/elearning/index.html.

Instructor Statement on the Use of Animals in Research and Teaching Laboratories

Failure to treat animals with proper consideration for their health, well being and comfort will not be tolerated. Students who are uncomfortable with the use of animals in lab are encouraged to discuss their concerns with their classmates, TAs and instructor. For more information regarding the proper and ethical use of animals in teaching and research please visit: http://www.clemson.edu/research/compliance/iacuc as well as the following sites: Ethologists for the Ethical Treatment of Animals (www.ethologicalethics.org/) and American Psychological Association (www.apa.org/science/anguide.html)

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University Statement on Academic Integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form (**updated according to email sent to instructors on 02 01 2020**).

For additional information, see:
https://www.clemson.edu/academics/integrity/

Attendance Policy

The academic resources of Clemson University are provided for the intellectual growth and development of students. Class attendance is critical to the educational process; therefore, students should attend scheduled courses regularly if they are to attain their academic goals. In the event of an emergency, the student should make direct contact with the course instructor, preferably before a class or an exam takes place. Students should speak with their course instructors regarding any scheduled absence as soon as possible and develop a plan for any make-up work. It is the student's responsibility to secure documentation of emergencies, if required. A student with an excessive number of absences may be withdrawn at the discretion of the course instructor. Course instructors must implement fair grading procedures and provide an opportunity to make up missed assignments and examinations that does not unfairly penalize the student when an excused absence is accepted. Such make-up work shall be at the same level of difficulty with the missed assignment or examination. Course instructors shall hold all students with excused absences to the same standard for making up missed assignments or examinations. While course instructors should seek to make reasonable accommodation for a student involved in University-sponsored activities, students should understand that not every course can accommodate absences and that absences do not lessen the need to meet all course objectives.

Absence from class is detrimental to the learning process, so course instructors may use reasonable academic penalties which reflect the importance of work missed because of unexcused absences. Course instructors who penalize students for unexcused absences must specify attendance requirements as related to grading in the course syllabus and must keep accurate attendance records. Course instructors are obligated to honor exceptions to the university attendance policy for students covered by the Americans with Disabilities Act, as verified through paperwork issued by Student Disability Services.

Notification of Absence

The Notification of Absence module in Canvas allows students to quickly notify instructors (via an email) of an absence from class and provides for the following categories: court attendance, death of family member, illness, illness of family member, injury, military duty, religious observance, scheduled surgery, university function, unscheduled hospitalization, other anticipated absence, or other unanticipated absence. The notification form requires a brief explanation, dates and times. Based on the dates and times indicated, instructors are automatically selected, but students may decide which instructors will receive the notification. This does not serve as an "excuse" from class, and students are encouraged to discuss the absence with their instructors, as the instructor is the only person who can excuse an absence. If a student is unable to report the absence electronically, he/she may call the Office of Advocacy and Success at 864-656-0935 for assistance and guidance.

The Office of Advocacy and Success also assists students in identifying various appropriate methods of documenting absences and assists families in using the electronic Notification of Absence system when students are unable to do so themselves.

Instructor Statement on Missing Class, Lab or Exams

The course lectures are designed and presented in classroom using Microsoft PowerPoint (and/or a later version). I will attempt to make each PowerPoint presentation available to you (as an outline file) the evening or night before a specific lecture topic is covered during class hours. This material will be posted in Canvas. Remember, you need a valid Clemson computer account to access all these materials. The different files I will be posting will be organized by topic. Also, the file names are listed on the lecture schedule above. Ideally, you do need to read the different book chapters before the lectures for optimal understanding and

performance during the course. The outline file is useful as a guide during lectures. You do need to take additional in-class notes and read the different book chapters in Brusca & Brusca (2016) to enrich the outline file and understand the material/ information transmitted during lectures. Remember, you need to (1) attend lecture, (2) take notes, and (3) read the book, in order to do well on the lecture quizzes and exams.

Important: If you fail to participate in an activity (e.g., ICPA or exam) you will have a zero grade for that activity. If, for major reasons, you know that will be unable to attend a regularly scheduled class, exam or lab you need to contact the instructor in advance to make arrangements to take the exam early or attend another section of lab (please, see attendance policy above). In the case of an unplanned absence due to illness or death in the family, contact your instructor as soon as possible.

Important: The material presented in lecture most probably will go beyond what is presented in your textbook and lecture PowerPoint slides. The above explains why is important for you to attend lectures!. If you miss a lecture, I recommend seeking the notes of a classmate(s) and study with him/her(them) for exams.

Emergency Procedures

Emergency procedures have been posted in all buildings and on all elevators. Students should be reminded to review these procedures for their own safety.

Copyright Statement

Materials in some of the courses are copyrighted. They are intended for use only by students registered and enrolled in a particular course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Students should be reminded to refer to the Use of Copyrighted Materials and “Fair Use Guidelines” policy on the Clemson University website for additional information (link https://clemson.libguides.com/copyright).

Election Dates

The South Carolina Democratic primary will be held on February 29, 2020 and the deadline for voter registration is January 30, 2020. (As of this writing, no South Carolina Republican primary has been scheduled.). The nonpartisan Campus Vote Project has compiled information for all students on state-by-state voter registration: https://www.campusvoteproject.org/state-student-voting-guides.

General Education Competencies

This course has the ability to satisfy or contribute to the satisfaction of several General Education competencies. This course is designed to satisfy or contribute to the following competencies: 1. Natural Science, 2. Science, Technology, and Society, 3. Communication, 4. Critical Thinking Skills, and 5. Ethical Judgment. Please, consult the Undergraduate Catalog for a complete discussion of the nine competencies.