IB 271 – Organismal Biology, Spring 2025 Lecture Syllabus

Class meeting times: MWF 11-12 (lectures), W 1-5 (labs), 4014/4016 Natural History Building

Prerequisites:
IB 150 (Organismal & Evolutionary Biology), MCB 150 (Molecular & Cellular Basis of Life) and IB270 (Evolution of Molecules and Cells)

Instructors:

Plant Section	Animal Section
Professor Li-Qing Chen	Professor Chris Cheng
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TA for the plant section	TA for the animal section
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Plant section – Prof. Li-Qing Chen (1st 7 weeks | January 21 – March 10, 2025

About me:
I am an Associate Professor in the Department of Plant Biology, affiliated with the Carl R. Woese Institute for Genomic Biology and the Center for Digital Agriculture. My lab focuses on controlling sugar flux in plants. We are investigating how sugar allocation from photosynthetic to non-photosynthetic tissues is controlled and regulated using molecular, biochemical, and genetic tools. The ultimate goal is to improve global food security by engineering sugar flux in crops.

Section description:
What do we know about plant biology and how? This course is designed to provide you with a broad overview from various perspectives, including plant cell biology, plant metabolism, and plant developmental biology. You will be able to apply your acquired knowledge to better explain phenomena in the plant biological world and evaluate the global challenges we face, such as food security.

Section Objectives:
Upon completing this course, students will be able to

1. Distinguish how plants are different from other organisms.
2. Understand the primary metabolic processes in plants
3. Explain how plants respond to environmental cues.
4. Understand how plant physiology helps to resolve some issues we are facing.

Textbook:
The basic textbook is Campbell Biology by Lisa Urry,12th ed, but 11th ed would work. Substantial other materials or readings will be provided by the instructor on Canvas.

Animal section – Prof. Chris Cheng (2nd 7 weeks | March 11 – May 7, 2025)

About me:
I am a Professor in the Dept. of Evolution, Ecology and Behavior (EEB) in SIB. I study cool (literally) polar fishes, on how they evolve and adapt to freezing conditions in the Antarctic and Arctic waters. I also study how land insects survive freezing winters. The unifying adaptive trait in these organisms is antifreeze proteins, which are diverse in structure and genetic origins. I work across levels of organization, from genes and

genomes, to proteins, to whole animals and field biology. This integrative approach allows me to understand the interplay of environmental driving forces and animal response and adaptation, and the underlying mechanisms of adaptive trait gain at the biochemical, molecular, genomic and evolutionary levels.

Section description:
This Section aims at achieving a solid understanding in two major related areas: (i) diversity and evolutionary relationships of major animal lineages, and (ii) fundamentals of physiology and physiology of animals in diverse environments. The goal is to instill an understanding and strong appreciation of the animal world, and the remarkable forms and functions they evolved that are compatible with life in their particular niches.

Section Objectives:
Upon completing this section, students are expected to:

1. Become familiar with the major phyletic lineages that comprise animal diversity
2. Understand evolutionary relationships among lineages through molecular phylogenetics reconstruction
3. Understand basic organ and system physiology of animals including human (partly).
4. Understand adaptive physiology of animals in different environments.

Textbook and instruction materials:
The basic text book is Campbell et al. BIOLOGY, 12th ed. Journal papers and instructor prepared information comprise a substantial part of the lecture material.

Grading components for each section - (50% for each section)

COMPONENT		COMPONENT SUBTOTAL	% of FINAL GRADE
• **Prelab/postlab activities (6 @ ~ 8.4 pts each)**		**50 pts**	**5%**
• **Lab reports/presentation:**		**200 pts**	**20%**
- One formal lab report	120 points		
- One popular science essay	50 points		
- Lab poster/PPTX presentation	30 points		
• **Pre-lecture assessments/literature discussion and/or short writes (~10 @ ~5 pts each)**		**50 pts**	**5%**
• **Exams (2 @90 pts 1st and 110 pts 2nd)**		**200 pts**	**20%**
Section Total		**500 pts**	**50%**

Extra Credit:
There are three ways to earn up to **4 % overall extra credit** for the whole course.

- **Lab journal submission (3 %)**: You can choose to submit up to 6 (3 for the Plant Section, and 3 for the Animal Section) in-person lab journals, 5 points for each lab journal.
- **Student surveys (0.5 %)**: We very much value your feedback for continually improving our teaching and this course! Participation in two formal (ICES) surveys, one for each section, will earn 0.25% each.
- **Five-minute writes (up to 0.5 %)**: You will be asked to address a few short questions after a lecture to assess your learning outcome from the lecture of the day several times, 1 point for each write-up.

Letter Grades Assignment - will follow the +/- scheme. Please note that UIUC does NOT specify a standard percentage associated with letter grades (URL). The letter grade assignment for IB271 will approximate the common final course percentages but will be adjusted based on various considerations including overall class performance, among others.

Notes regarding expectations for written work:

IB271 is designed to satisfy the campus requirement of Advanced Composition for your degree program. This means, by completing IB271, it exempts you from having to take RHET233 separately. The writing assignments aim to help you gain scientific writing skills. The advancement of science requires articulation of research studies and result outcomes in clear and understandable prose. You have started learning these skills in the first IBH core course. IB271 emphasizes further development of your skills in reading, synthesizing, and writing scientific material. As you may have noted in the grade breakdown above, lab reports and lab presentation make up 40% of the final course grade, equal weight as the lecture exams. These exercises require significant writing effort on the part of the students, and a significant commitment on the part of the instructors to give feedback. Be cognizant that your grade relies heavily on your written performance. Students are expected to make best effort in their exam answers and lab reports to cite literature and examples that acknowledge contributions of scientists from diverse populations.

Written assignments and exercises include the following:

1. Laboratory journals (optional for extra credit)– For any scientist, the daily record of her/his work – written in a way that it can be found and understood six months or six years from the date of the writing – is essential to progress. To be an effective record, the lab journal entries must be made during or immediately after an experiment, observation or cogitation. In this course, you will be required to keep a laboratory notebook. Raw data and initial analyses will typically be recorded in this physical lab notebook. If you wish to earn extra credit, please submit your notebook or scan it as a PDF file to upload to the specified site on Canvas by Thursday night. The specific requirements for lab journal submission will be posted on Canvas. Your physical notebook or scanned file with comments from your TA will be returned on Friday. **Bear in mind,** lab journaling is a **transferable skill** that will help you when you participate in the IBH required independent research (IB390, IB490) in a faculty lab, as record keeping of your work is always expected and needed.

2. Prelab or postlab activities: Multiple choice questions or short answer questions will be given.

3. Lab reports:

(i) One formal lab report from each section, *i.e.* **two for the semester**.

For the Plant Section **-** the formal report will be prepared from the results of lab 4 (Chloroplast Pigments and Proteins) in combination with lab 3, or lab 5 (Photosynthesis/Starch).

For the Animal Section – the labs comprise two topical studies that span multiple lab periods. (i) Evolutionary relationship analyses of animals (labs 1 and 3); (ii) Osmotic strategies of marine crabs (labs 4-6). The formal lab report should be prepared with the results of one of these two studies.

Guidance on writing – The culmination in formal scientific investigations is published research reports. To experience this, you will submit lab reports in the format of a journal manuscript. While you may discuss results with your peers, **the report must be single-authored.** The paper should be precisely patterned after and formatted as a journal publication, with the following general stipulations:

- Abstract – word limit 500; a very concise synopsis of why and how you did the study, what results you obtained, and an evaluation of whether they support your hypothesis.
- Introduction – background and any hypothesis/hypotheses that were specifically tested
- Materials and Methods – organized in subsections with subtitles
- Results and Discussion – organized in subsections with subtitles
- Conclusion – word limit 500.
- Bibliography.

(ii) A shorter report/essay will be prepared from research literature on a topic relevant to the course. This short report will be **in popular science style**. Again, **the small report must be single-authored**.

- Make sure your writing is suited for a non-specialist audience;
- Make the title short and catchy;
- Begin with a general background introduction about your project;
- Describe the methods and techniques only briefly;
- Simplify results, but be accurate;
- Avoid jargon.

Writing feedback – To satisfy the **Advanced Composition** requirement, each paper will be evaluated with the expectation of at least one subsequent revision. Students will submit a first draft of the reports at a specified time (in the calendar at the end of this document) for comments by the TA and instructor. The final report should include improvements that incorporate TA/instructor suggestions.

4. **Lab presentations:**

- **Lab posters (Plant Section) –** You will pair with another student and prepare and present a poster on one lab (or set of labs) or research literature different from the one you use for pop sci. More specific instructions will be provided by the instructor/TA.
- **Lab oral presentations (Animal Section) –** You and your group members will prepare and give an oral PowerPoint presentation on a lab of your choice. More specific instructions will be provided by the instructor/TA.

5. **Pre-lecture assessments/short writes –** Pre-lecture assessments are chapter based. Each chapter has 20 multiple-choice questions. This assessment applies to both sections. For the plant section, in-class literature discussions are included to guide students on how to read a scientific paper. Short writes are homework writing exercises of one or two paragraphs or a problem set on a topic or particular interest relevant to class lectures.

5. **Exams** – Two written exams are scheduled for each section. They will be **take-home exams**.

Respect and Inclusivity in Learning:

This course treats everyone with respect as valued students regardless of appearance or expressed gender preferences, as any race or gender can be a great contributing scientist.

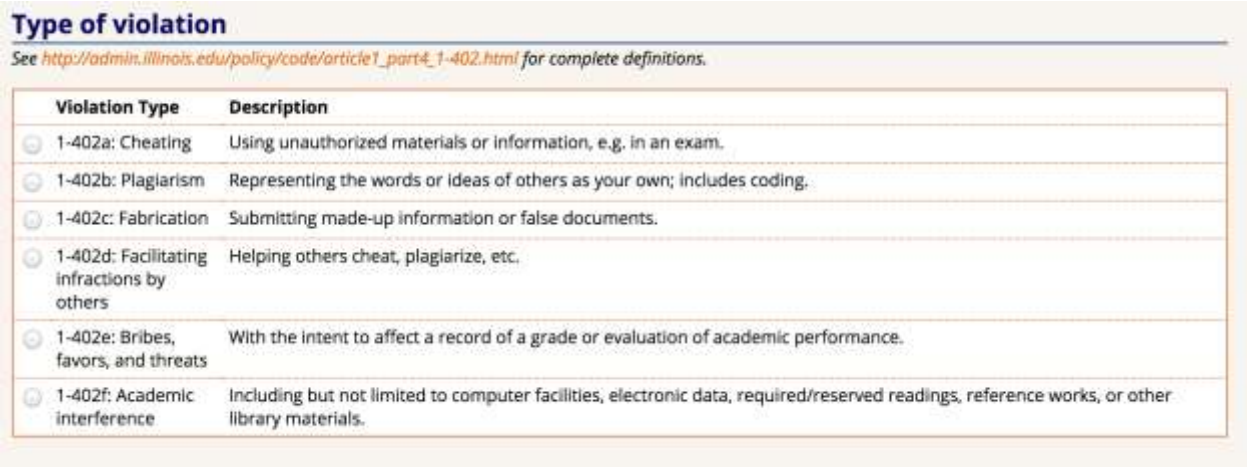
Attendance/Participation:

Students are expected to attend all scheduled classes and labs, participate in class discussions and quizzes, and perform all required lab activities. Students are required to mute phones, laptops, and tablets during class and lab periods. Lecture slides will be posted on Canvas before classes. Slides are subject to revision after lectures are delivered. Please watch announcements in the news forum of Canvas or class emails closely for updates. Frequent absences will necessitate further discussions with the instructor and TA to ensure you stay on track with the course. It is your responsibility to communicate proactively and follow up to arrange to make up any missed work.

Statement of Academic Integrity

The Academic Integrity Policy and Procedure from the Student Code (http://studentcode.illinois.edu/article1/) will apply in all instances of academic misconduct committed by students. This applies to all exams, lab reports and quizzes. Infractions of academic integrity regulations are taken seriously and can result in severe consequences, including expulsion from the University. As a student of

the University, it is your responsibility to become familiar with, understand, and abide by the Academic Integrity section of the Student Code. It should be noted that ignorance of these regulations is not a defense in cases of infringement of the rules of academic integrity.



Type of violation

See http://admin.illinois.edu/policy/code/article1_part4_1-402.html for complete definitions.

Violation Type	Description
1-402a: Cheating	Using unauthorized materials or information, e.g. in an exam.
1-402b: Plagiarism	Representing the words or ideas of others as your own; includes coding.
1-402c: Fabrication	Submitting made-up information or false documents.
1-402d: Facilitating infractions by others	Helping others cheat, plagiarize, etc.
1-402e: Bribes, favors, and threats	With the intent to affect a record of a grade or evaluation of academic performance.
1-402f: Academic interference	Including but not limited to computer facilities, electronic data, required/reserved readings, reference works, or other library materials.

Accommodations

Your success in studying this course is important to us. If you are unable to complete your lab reports or exams, because of professional or personal obligations or emergency situations, you should notify the instructor IMMEDIATELY. Accommodations must be clear and brief. Decisions will be made on an individual basis. If you have a disability, please send the instructor a Letter of Academic Accommodations within the first two weeks of the semester. You can learn how to get a Letter of Academic Accommodations from DRES by following this link (http://disability.illinois.edu/academic-support/accommodations).

Please reference the Community of Care's Request for Accommodation for Religious Observances page (https://odos.illinois.edu/community-of-care/resources/students/religious-observances/). This links to the Request for Accommodation for Religious Observances form that should be completed for those students seeking religious accommodations."

***NOTE: The syllabus is subject to minor adjustments during the semester to build in flexibility.**

Chen - Plant Section Schedule:

Date	Topic	Pre-class reading & assessment	Assignment schedule (may change as needed)
01/22 (W)	Introduction: why study plants?		Prelab 1 activity due before lecture
	Lab 1 - Greenhouse tour and scavenger hunt		Postlab 1 activity due **on Thursday**
01/24 (F)	Plant body establishment	Chapter 35	
01/27 (M)	Plant growth	Chapter 8	
01/29 (W)	Energy flow (enzyme and cellular respiration)	Chapter 9	Prelab 2 activity due before lecture
	Lab 2 - soluble sugar extraction and measurement from veggies		Postlab 2 activity due **on Thursday**
01/31 (F)	Literature discussion		
02/03 (M)	Energy flow (Photosynthesis 1)	Chapter 10	Pop science draft due **on Tuesday**
02/05 (W)	Energy flow (Photosynthesis 2)		Prelab 3 activity due before lecture
	Lab 3 - protein extraction and measurement from veggies		Postlab 3 activity due **on Thursday**
02/07 (F)	Energy flow (Photosynthesis 3)		Pop science draft return Take home exam 1 post
02/10 (M)	Energy flow (Photosynthesis 4 and photorespiration)		Pop science due **on Tuesday**
02/12 (W)	Sucrose, starch and phloem transport	Chapter 36	Prelab 4 activity due before lecture
	Lab 4 - Chloroplast pigments and proteins		Postlab 4 activity due **on Thursday**
02/14 (F)	Literature discussion		Pre-poster preparation Take home exam 1 due
02/17 (M)	Water transport	Chapter 37	
02/19 (W)	Nutrient acquisition		Prelab 5 activity due before lecture
	Lab 5 -Photosynthesis and starch		Postlab 5 activity due **on Thursday**
02/21 (F)	Plant growth regulation	Chapter 39	
02/24 (M)	Plant growth regulation		Formal lab report-Results/Discussion draft due
02/26 (W)	Responses to biotic stress		Prelab 6 activity due before lecture
	Lab 6- Transpiration and stomata		Postlab 6 activity due **on Thursday** Formal lab report-Results/Discussion draft return **on Thursday**
02/28 (F)	Literature discussion		Formal lab report - Abstract/Intro draft due
03/03 (M)	Response to abiotic stress		Formal lab report - Abstract/Intro draft return Take home exam 2 post **on Tuesday**
03/05 (W)	Response to abiotic stress		
	Lab 7 - Poster preparation		Form Lab report due **on Thursday**
03/07 (F)	Poster presentation		
03/10 (M)	Poster presentation		Take home exam 2 due **on Tuesday**

Cheng – Animal Section Schedule:			
Date	**Topics**	**Pre-class reading & assessment**	**Assignment schedule (may be adjusted as needed)**
03/12 (W)	Evolution of life and diversity on Earth	Chapter 25	
	Lab1 – Evol analysis part 1_PCR amp and sequencing of mt COI		
03/14 (F)	Methods of reconstructing evolutionary relationships	Chapter 26	
03/15– 03/23	SPRING BREAK week		
03/24 (M)	Phylogenies of animal kingdom	Chapter 32	
03/26 (W)	Phylogenies of animal kingdom/ Invertebrate diversity		
	Lab2 – Anatomical survey of animals across kingdom		
03/28 (F)	Invertebrate diversity and evolution	Chapter 33	
03/31 (M)	Invertebrates and Chordata diversity and evolution	Chapter 34	
04/02 (W)	Chordates and Vertebrate diversity and evolution		
	Lab3 - Evol analysis part 2_phylogenetic reconstruction of species tree using mt COI sequence data set		
04/04 (F)	Finish up Vertebrate diversity and evolution		
04/07(M)	Osmotic and ionic balance	Chapter 44	
04/09 (W)	Non-renal and renal osmoregulation		Take home exam 1 posted
	Lab4 – Osmotic strategies part 1_set up experimental aquaria		
04/11 (F)	Non-renal and renal osmoregulation; excretion		
04/14 (M)	Fundamentals of vertebrate immune system	Chapter 43	Take home exam 1 **due**
04/16 (W)	Vertebrate immune system functions		Formal lab report choice1 (Labs1+3) draft **due**
	Lab5 - Osmotic strategies part 2_final osmolality and ion concentation measurements of all samples. (Acclimation of crabs and serial acclimation time points samplings will take place between labs 4 and 5)		
04/18 (F)	Vertebrate immune system functions		
04/21 (M)	Circulatory and Respiratory systems	Chapter 42	PopSci draft **due**
04/23 (W)	Respiratory functions		Comments on formal lab report choice1 returned
	Lab 6 – Osmotic strategies part 3_finish measurements; data husbandry and tabulation. Initial data synthesis.		
04/25 (F)	Hemoproteins and blood-gas exchange		
04/28 (M)	Nervous systems and neuron structures	Chapter 48	PopSic final **due**
04/30 (W)	Nervous signal transmission	Chapter 49	Formal lab report choice2 (Labs4+5) draft **due**
	Lab 7 – Analyses of Labs3-6 data using R. Data round table for all labs and Preparations for pptx presentation		
05/02 (F)	Nerve signal transmission; sensory systems		Final formal lab report choice1 **due**
05/05 (M)	Sensory systems, signal transduction	Chapter 50	
05/07 (W)	Motor output		Comments on formal lab report choice2 returned
	Lab8 – PPTX project/selected research topic presentation		
05/08 (Th)	**READING DAY**		Take home Exam 2 posted
05/13 (Tu)			Take home Exam 2 **due**
05/16 (F)			Final formal lab report choice2 **due**

IB 271: Honors Organismal Biology Lab Syllabus

Spring 2025

Section: AB1 (4014 Natural History Building)

♦ **TA Contact Info:**

- **Plant Section –** Yi-Hsuan Lin
  - **e-mail:** yihsuan6@illinois.edu
  - **Office:** 379 ERML
  - **Office Hours:** By appointment. Feel free to email me with questions at any time, and we can set up a meeting from there!

About me:

I'm a first-year Ph.D. student currently working with Dr. Li-Qing Chen. Our research focuses on sugar partitioning in sorghum plants. Through genetic engineering, we aim to manipulate sugar flux in targeted organs for applications in the biofuel and bioenergy industries. In short, we are exploring the mechanisms of sugar accumulation using genetic engineering, omics analysis, and molecular biology.

- **Animal Section –** Shriram Bhat
  - **e-mail:** sb65@illinois.edu
  - **Office:** 17C, Burrill Hall
  - **Office Hours:** By appointment. Feel free to email me with any questions or problems and we can set up a meeting from there!

***About me*:**

I'm a third-year PhD student in Prof. Chris Cheng's lab. I work on the evolution of antifreeze glycoproteins in various Antarctic fishes with the help of comparative genomics, using various bioinformatics tools and approaches. I'm also working on population dynamics and speciation patterns in a family of fishes that's predominantly found in the Arctic and the Subarctic regions. I'm always happy to talk more about my research and computational approaches used to answer biological questions.

♦ **General Laboratory Practices:** You are expected to follow these good practices:

- No food or drinks are allowed during the laboratory (NHB 4014 and NHB 4012). Please discard it as you enter the classroom or put it away for the duration of the lab.
- Please silence all cell phones. Either put it on silent or turn it off completely.
- If you happen to come in late, please enter as quickly and quietly as possible without interrupting anything that may be going on.
- Please dress appropriately (some labs can be messy, so I wouldn't suggest wearing anything that you don't want to get dirty). Lab coats and bags can be stored in the classroom next to the lab. No open-toed shoes or short pants!
- Clean up at the end of each lab period and wash your hands with soap before leaving the laboratory.
- Do not sit on the tables, use the chairs. Keep a responsible and respectful attitude during class. A laboratory is not a place for making fun of your classmates.

- The TA and prep staff are not responsible for any student's belongings during or after labs; bring only necessary items to class and make sure you take your personal belongings with you after each class.
- The IBH classroom and lab suite is dedicated for use by you, the IBH students. Please make voluntary effort to maintain the suite a clean and well-kept home for yourselves and all future cohorts after you.

♦ Lab participation and authorized absence

Students are expected to attend and actively participate in all lab periods and exercises. In the event of an emergency or illness that would preclude attending an upcoming lab, notify the instructor and TA as soon as possible, and provide appropriate documentation from the medical provider or from the emergency Student Dean.

For an authorized absence, the TA will instruct the student on the necessary tasks to make up for the missed lab and the timeframe for completion.

♦ Laboratory grade (for EACH SECTION) breakdown – (25% each lab section):

- Prelab/postlab activities 5%
- Lab reports/presentation 20%

One formal lab report	12%
One short lab report	5%
Lab poster/PPTX presentation	3%

- Extra Credit for Lab journals - maximum +1.5%
  Up to 3 lab journals for in-person labs for each section, 5 point each.

♦ Laboratory Manual and Journals:

- **Laboratory manual:**

You are expected to read and bring a copy of the corresponding lab manual with you every week. The lab manuals are posted on the course website (www.learn.illinois.edu). You can pre-review the lab protocols on your computer if you prefer. Having a hard copy with you in the lab is a necessity for you to be able to follow the many steps and details in each lab. Most of the labs are complex and will use the full 4-hour lab period. ***Understanding the lab protocol before the lab period and be prepared to work with precision is the key to finishing all labs on time.*** **Coming to the lab unprepared and trying to figure out what you have to do on the fly guarantees you have to stay beyond lab period to finish.** Please take ownership of your learning, work with purpose, and collect data with accuracy. If data are not accurate, you will have a challenging time in interpreting the results for your lab journal and lab reports. As they say, *trash in, trash out*! IB271 requires hard work, but you can learn plenty and find it enjoyable too. Your instructor and TA will help you, but ultimately it is up to you - the more effort you put in, the more you will learn and the better you will do.

- **Laboratory journals:**

Good lab note taking is a skill and necessity for success in any research. You will soon (if you have not already) participate in the IBH required independent research (IB390/IB490) in a faculty lab you join, where you will be expected to chronicle your work, *i.e.* record everything you do in a lab notebook. **Thus, keeping a lab notebook in IB271 starts you on this transferable skill.** In this notebook you will write out the procedure for that week's lab including any relevant solutions you will need (this must be done before coming to the lab). During the lab you will make notes on what you did differently from the protocol or any relevant values or information you noticed should be recorded as well. This semester, we are making lab journals an extra credit item, due to constraints on time and personnel from the pandemic. **While optional, lab journal submissions are highly encouraged.**

To encourage good note-taking and record-keeping, extra credit will be awarded to lab journals that are typed up and submitted as a Word ***document*** **after the lab is finished. One and a half (1.5) points per Section can be earned through this, @ 0.5 point for each lab journal submitted in this way, *i.e.* a maximum of three points for the course, equivalent to 3% of the weighted final course score of 100 points.**

Grading of the lab journals will assess these four areas: (i) prelab procedures (including pre-labwork flow charts, lab notes and solutions), (ii) your postlab results (including tables, figures and graphs), (iii) your postlab discussion. For more details about the structure and grading of the lab journals, please refer to the "IB 271 Notebook Grading Rubric Spring 2025" on Canvase.

♦ **Prelab activities，postlab activities or virtual lab quizzes (50 points each section)**

- **Prelab activities** are to assess your understanding of the goals of the labs and lab procedures. Being well prepared will enable you to work more efficiently and thereby complete the lab within 4 hours. Prelab activities are quizzes and/or short questions.
- **Postlab activities** will include short questions to assess how well you understand the hypothesis tested in the lab, address some questions related to the experiment design and/or explain your lab results. For some labs, you may be asked to interpret some given experimental results collected from the previous years or your peers. Your work will be manually graded by a TA.

  - ***Plant section, grade breakdowns:*** **5%**

    Prelab 1 quiz: 2 points; Postlab 1 activity: 8 points
    Prelab 2 quiz: 2 points; Postlab 2 activity: 8 points
    Prelab 3 quiz: 2 points; Postlab 3 activity: 8 points
    Prelab 4 quiz: 2 points; Postlab 4 activity: 8 points
    Prelab 5 quiz: 2 points; Postlab 5 activity: 8 points
    Prelab 6 quiz: 2 points; Postlab 6 activity: 8 points

  - ***Animal section grade breakdowns:*** **5%**

    Similar to plant section. Details to be posted before the Animal section begins

♦ **Laboratory Reports:**

- For the **Plant Section** (Dr. Chen) you will submit two reports:
  1. One Formal Lab Report will be prepared from the results of lab 4 (the plant pigments/proteins) combined with what you will have learned from lab 3 or lab 5 (Photosynthesis/Starch).
  2. One Pop Science from the literature relevant to the topics of plant section. You are welcome to discuss the literature of your choice with instructors.
- For the **Animal Section** (Dr. Cheng), you will submit two reports:
  1. One Formal Lab report for Labs 1 and 3 (Evolutionary Analysis) or Labs 4 -6 (Osmotic Strategies).
  2. One Pop Science news article relevant to topics in animal biology, discoveries by female scientists and scientists from underrepresented groups. A suggested list of topics will be provided. You are welcome to discuss aspects of your choice with instructors.

♦ **Guidance on Preparations of Lab Report:**

- **Formal Lab Report:**

The formal lab report (hard copy and digital copy) is due as indicated on the syllabus. **Before the final submission of your lab report, you are required to submit drafts as indicated on the syllabus**. Your TA will return these drafts as indicated on the syllabus containing useful feedback. **After receiving your TA feedback/comments on your draft, you must incorporate the required changes on your final version.** This interactive feedback and improvement of writing the report are **mandated by campus rules** in satisfying the Advanced Composition requirement built into IB271 (or into any other course).

Electronic files of your drafts (MS Word) need to have your last name and assignment name in the filename (e.g. Chen_FLR1_2024). For more details about the structure and grading of the lab reports, please refer to the "IB 271 Lab Report Guidelines and Grading Rubric Spring 2025" on Canvas.

There is a comprehensive resource: "Writing Tips: Lab Reports and Scientific Papers" by the Center for writing studies that can give you important tips to improve your writing in your reports (http://www.cws.illinois.edu/workshop/writers/tips/labreports/index.html).

- **Pop Science news article:**

This report is formatted following the format of the magazine Popular Science (https://www.popsci.com/science/). Please refer to an example on Canvas. For more details about the structure and grading of the lab reports, please refer to the "IB 271 Lab Report Guidelines and Grading Rubric Spring 2025" on Canvas.

You can turn in lab reports up to TWO days late, however you will lose 5 points per day that it is late. **Reports will not be accepted later than two days after deadline!** Late reports must be turned in to your TA in person and by e-mail.

♦ **Plagiarism policy**

The University of Illinois has a strict no plagiarism policy that you all should be familiar with. Plagiarism may result in failure for the grade of the activity, and therefore a failing grade for the course, and/or inquiry. All materials taken from an outside source must have proper credit

given. Because most work will be done in groups, collaboration is necessary. **Despite some lab results will be shared with the whole class, you MUST write your own lab report and create your own graphs and cite your own sources**. **Plagiarism will not be tolerated in this class. This includes using the ChatGPT to do your writing!**

***NOTE: The lab syllabus is subject to minor adjustments during the semester when the need arises.**

IB 271 – Organismal Biology, Spring 2025 Weekly Calendar

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Jan 2025	**7**	**8**	**9**	**10**	**11**	**12**	**13**
	19 Week 1	**20**	**21** SP2025 starts	**22** Lab 1 - Greenhouse tour and scavenger hunt Prelab 1 activity	**23** Postlab 1 activity	**24** Reading quiz Ch 35	**25**
	26 Week 2	**27** Reading quiz Ch 8	**28**	**29** Lab 2 – Sugar extraction and measurement Reading quiz Ch 9	**30** Postlab 2 activity	**31** Literature discussion	**1**
Feb 2025	**2** Week 3	**3** Reading quiz Ch 10	**4** Pop sci draft due	**5** Lab 3 - protein extraction and measurement Prelab 3 quiz	**6** Postlab 3 activity	**7** Pop sci draft return Take home exam 1 post	**8**
	9 Week 4	**10**	**11** Pop sci due	**12** Lab 4 - Chloroplast pigments and proteins Prelab 4 quiz Reading quiz Ch 36	**13** Postlab 4 activity	**14** Take home exam 1 due Literature discussion	**15**
	16 Week 5	**17** Reading quiz Ch 37	**18**	**19** Lab 5 – Photosynthesis and starch Prelab 5 quiz	**20** Postlab 5 activity	**21** Reading quiz Ch 39	**22**
	23 Week 6	**24** Formal lab report- results / discussion draft due	**25**	**26** Lab 6 – Transpiration and stomata Prelab 6 quiz	**27** Postlab 6 activity Formal lab report- abstract/intro draft return	**28** Formal lab report- abstract/intro draft due Literature discussion	**1**
Mar 2025	**2** Week 7	**3** Formal lab report- abstract/intro draft return	**4** Take home exam 2 post	**5** Lab 7 - poster preparation	**6** Formal lab report due	**7** poster presentation	**8**
	9 Week 8	**10** poster presentation	**11** Take home exam 2 due	**12** Animal section starts. Reading quiz Chap25 – Evol of life and diversity on Earth Lab 1- Evol ananlysis part 1 – PCR & sequencing of *COI*	**13**	**14** Reading quiz Chap26– Phylogeny methods **Phylogenetic methods**	**15**
	16 Week 9	**17** Spring break	**18** Spring break	**19** Spring break	**20** Spring break	**21** Spring break	**22**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	23 **Week 10**	**24 - Animal phylogenies** Readiz quiz Chap32	**25**	**26 cont'd-Animal Phylogenies; Invertebrates diversity & evol** Lab 2 -animal anatomical survey, cladogram construction	**27**	**28 Invertebrates diversity & evolution** Reading quiz Chap 33	**29**
	30 **Week 11**	**31 Vertebrate diversity & evolution -** Reading quiz Chap34	**1**	**2 cont'd – Vertebrate diversity & evolution** **Lab 3 – Evol analysis part 2** phylogenetic trees	**3**	**4** Flex period – catch up/finish up on the topics up to now.	**5**
Apr 2025	**6** **Week 12**	**7 Osomotic and ionic balance** Reading quiz Chap44	**8**	**9 Osmoregulation** - Take home Exam I posted Lab 4 – Osmotic strategies part 1 –expt design, set up seawater aquarium system	**10**	**11 Osmoregulation; excretion** (Lab 4 – extra credit – sort live crabs and acclimate in 100% seawater)	**12**
	13 **Week 13**	**14 Fundamentals of Vertebrate immune system**. Reading quiz Chap 43 Exam 1 DUE	**15**(Lab 4 – extra credit – start acclimation; serial sampling for acclimation kinetics)	**16 Vert immune system functions** Lab 5–Osmotic strategies part 2 (finalsampling; osmotic and ionic analyses of all samples)	**17**	**18 Vert immune system functions**	**19**
	20 **Week 14**	**21 Circulatory/Respiratory systems** Reading quiz Chap42	**22**	**23 Respiratory functions** Lab 6 – osmotic strategy part 3 (data analyses and synthesis)	**24**	**25 Hemoproteins and Blood/gas exchange**	**26**
	27 **Week 15**	**28 Nervous systems and neuron structures** – Reading quiz Chap48-49	**29**	**30 Nerve signal transmission** Lab 7 – Data round table Preparations for PPTX presentation	**1**	**2 Nerve signal transmission; sensory systems and signal transduction**	**3**
May 2025	**4** **Week 16**	**5 Sensory systems and signal transduction** – Reading quiz Chap50	**6**	**7** Last day of class **Lab 8 – lab project /selected research topic presentation.** Motor output – EC coupling (if time)	8 Reading day. Take hone Exam2 posted	**9**	**10 Friday May17, 2pm, grades due**
	11	**12**	**13**	**14**	**15**	**16**	**17**