

BIOL 1201: Molecular and Cell Biology

Tim Frasier
Saint Mary's University

Welcome!

To SMU



To Biology



Rojo Award

Student with the highest grade across BIOL 1201 & 1202



Dr. Alfonso Rojo

1921–2017

Founding member of SMU Biology

Shae Demale

Introductions

Dr. Tim Frasier



Research

Conservation genetics of endangered whale species



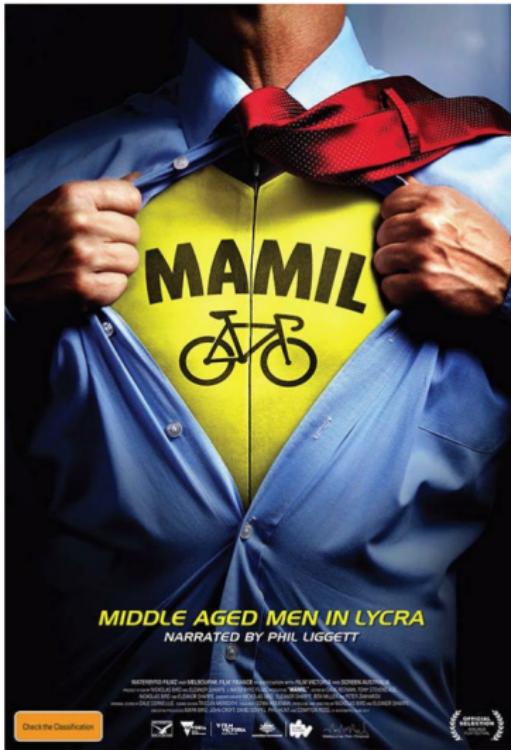
Forensics



The screenshot shows the homepage of the Natural Resources DNA Profiling & Forensic Centre. At the top left is a green moose logo. To its right, the text "NATURAL RESOURCES DNA PROFILING & FORENSIC CENTRE" is displayed. Below the header is a navigation bar with links: HOME, WILDLIFE FORENSICS, GOAT GENETICS, RESEARCH, NEWS RELEASES, CONTACT, and ABOUT. A large banner image at the bottom features two men in uniform standing next to a moose on a road, with the text "WILDLIFE FORENSIC DNA LABORATORY" overlaid.



The screenshot shows the Royal Canadian Mounted Police website. The header features a red maple leaf graphic and the text "Royal Canadian Mounted Police" with the website address "www.rcmp.gc.ca". Below the header is a black navigation bar with links: "Français", "Home", "Contact Us", "Help", "Search", and "Canada.ca". A breadcrumb trail "Home > Forensic Science and Identification Services > Biology Services" is visible. On the left, a sidebar for "Forensic Science and Identification Services" lists "Biology Services". The main content area displays the heading "Biology Services".



Contact Information

Office: Science Building, room S 327

Tel: 902-491-6382

E-mail: timothy.frasier@smu.ca

Please put BIOL 1201 in subject line

Office Hours: T 1:00–4:00
W 9:30–12:30
or via E-mail!

Course Content

All course content will be posted (and available) on the course Brightspace page

- Syllabus (with assigned readings)
- Lecture presentations
- Other relevant information and postings

Brief walkthrough

Lectures

Times: TR 11:30–12:45 MM Theatre

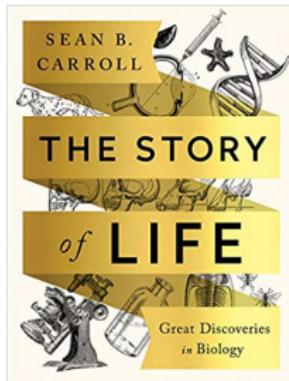
Will explain/discuss the relevant topics throughout the term

Content is *supplemental to*, **not** a *replacement for*, information from the textbooks

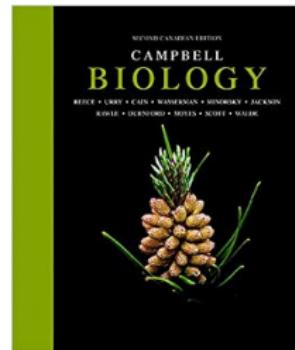
- Tests will focus primarily (but not exclusively!) on lecture content, **but** textbook information will help with understanding

Textbooks

Will have two perspectives of most topics: macro and micro, for a richer understanding

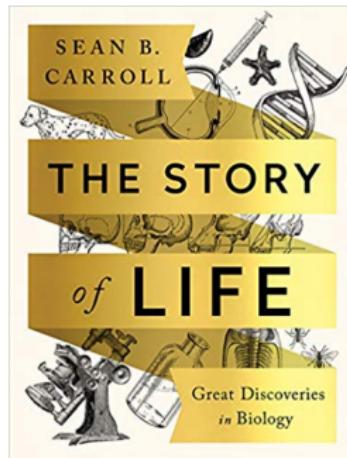


Stories associated with major topics



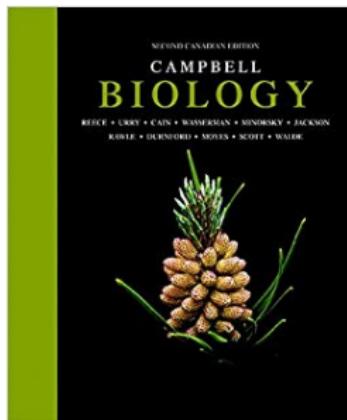
Detailed descriptions of major topics

Textbooks



- Just hard copy at bookstore (eBook from Amazon, etc.)
- Read as outlined in the syllabus (or more!)

Textbooks



- Hard copy and/or eBook at bookstore
- Read as outlined in the syllabus (or more!)
- Online content, including Mastering exercises
- **Learning Catalytics**

frasier96747

Learning Catalytics

The screenshot shows a web browser window for the learning catalytics platform. At the top, there's a navigation bar with links for Courses, Participate, Review, Classrooms, Account, and About. A user profile for Brian Lukoff from Harvard University is shown, along with a Log out link. The main content area has a blue header with the "learning|catalytics" logo. Below the header, it says "current session: 766079 | 69 students". There are several control buttons: Stop session, Review results, Seat map, Show floating session ID, Edit, PDF, and Delete. A "Jump to" dropdown menu and a page number selector from 1 to 15 are also present. The main content area displays a physics problem about light reflection off two mirrors. On the left, a smartphone screen shows the question and a diagram. On the right, a student dashboard shows two rounds of responses: Round 1 with 57 responses, 58% correct, and Round 2 with 51 responses, 73% correct. It includes a "Get it now" button with 8 responses and a "Still don't get it" button with 0 responses. A "feedback & support" link is at the bottom right.

Will have a tutorial **next class!**

Grades

Component	Subcomponent	Weight	Total
Labs			30%
Lecture	Clickers	5%	
	Mid-term Exam #1	20%	
	Mid-term Exam #2	20%	
	Final Exam	25%	70%
			100%

Grades

Component	Subcomponent	Weight	Total
Labs	Non-majors must obtain >50% in both the lecture and lab to get credit! Majors need >63% (C).	30%	
Lecture			
	Final Exam	25%	70%
			100%

Labs

Wet Labs: M, T, W, R 2:30–5:30 S 139

F 9:30–12:29 S 139

Tutorials: M, T, W, R 4:00–5:15 LA 179

F 10:00–11:15 LA 176

No labs this week or next week (i.e., labs start week of Sept. 16)

- WHMIS Training (by **Sep. 30**) - see Brightspace
- Lab coat & goggles
- Coordinator - Dr. Jessica Boyd (jessica.boyd@smu.ca)
- **These are independent from the lecture**
- *Explain structure*

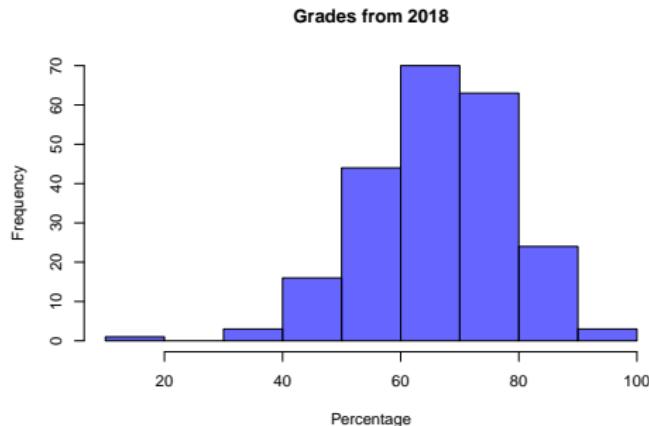
Labs

Week	Group alpha	Group beta
Sept 9 - Sept 13	No Lab	No Lab
Sept 16 - Sept 20	S139 Wet lab 1 1. Lab Safety 2. Pipeting boot camp 3. Set up Lemna with [NaCl] + questions (graded) Hypothesis and Predictions, what are you doing and why? collect data for 1 week Deliverables: 1. Pre-lab quiz on-line 2. Worksheet to submit at end of lab Homework: Collect 3 more data time points	No Lab
Sept 23 - Sept 27	Tutorial 1 LA classroom collect last Lemna data point (before coming to class). Activity (45 min): process data: calculate average scores per day; per [NaCl]; etc. calculate simple descriptive statistics (avg, std dev, std err) for last day make 2 graphs by hand; + questions (variables, data interpretation, conclusions) (graded) Lesson (45 min): Assign self-directed project and proposal, discuss additives and expectations How to write an hypothesis and predictions How to do a library search for reference material reference types? Research articles? Library?	S139 Wet Lab 1
Sept 30 - Oct 4	S139 Wet Lab 2 1. Microscopy and magnification 2. Observation of cells: elodea 3. Diffusion, osmosis RBC Deliverables: 1. Pre-lab quiz on-line 2. worksheet to submit at end of lab (Q's to lead students into critical thinking about why salt killed the Lemna) 3. Proposal	Tutorial 1
Oct 7 - Oct 11	Tutorial 2 LA classroom Lesson (45 min): How to write an Introduction Activity (45 min): Workshop Introduction Deliverables: none or draft intro Homework: prepare Introduction	S139 Wet Lab 2

To Do Before Next Lecture

1. Buy textbooks (including online component)
2. Register for Mastering online material
3. Register for Learning Calalytics and make sure that your phone is ready
4. Read assigned readings
5. Familiarize yourself with the Brightspace pages and the textbook website

Housekeeping



“Thanks for not doing your job. You tested us on completely different information than provided in lectures.”

“Thanks for making this course so easy. You gave us all the information we needed to ace the exams.”

Housekeeping

Exam questions will rarely be based solely on memorization

Instead, they will focus on testing your *understanding* of a topic

In this way, it is true that many exam questions will not be *exactly* on things that you have seen before, but if you *understand* the content you should be able to answer them.

Example

Material: Mitochondria are organelles inside of cells that produce energy; where sugars are broken down into ATP, which can then be used as energy for the cell.

Potential test question: Suppose a person has a genetic disease where their body produces only half of the “normal” amount of mitochondria in each cell. The functioning of which tissue/organ will be the most affected by this disease?

- a. Hair
- b. Heart
- c. Skin
- d. Toenails

Housekeeping

Should keep this in mind when you are studying

- Don't just memorize things
- Make sure that you *understand* them as well

Housekeeping

I won't know the answers to every question that you ask!

How To Succeed

1. Read texts *before* class
 - Take notes
 - What do you understand? What don't you understand?
2. Come to class looking to fill these gaps
 - Take notes accordingly (focused and thinking, rather than just writing down everything)
3. If still uncertain
 - Ask friends or other people who have taken the course
 - E-mail me and we can meet
4. Study briefly, but continuously, throughout the term, rather than cramming the night before

How To Study

There is a lot of research on what study methods work, and which do not. **Take advantage of this!!**

learningscientists.org



How To Succeed

Success is your responsibility!

There are many resources available to you to help you succeed:

- Textbooks
- Lectures
- Friends
- Tutors
- Professors
- ...

It is up to you to utilize them in a manner that works for you, and allows you to succeed.

Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others



Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others

Atrium 301

- Organizing courses
- Ensuring prerequisites are met
- Developing a plan for graduating on time
- Peer mentoring program
- ...

Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others

Burke 115

- Determine and develop a direction for a paper or assignment
- Strengthen papers or assignments
- Identify recurring grammatical errors or structural problems
- ...

Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others

Help you:

- Find things in the library
- Conduct effective and specific library and online searches
- Research planning
- Evaluating resources
- Reference properly
- ...

Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others

4th Floor of Student Centre

- Personal counselling
- Academic and life skills coaching
- ...

Other Resources To Help You Succeed

- Your professors!
- Science Advising Centre
- Writing Centre
- Library Services
- The Counselling Centre
- Others

There are more:

The screenshot shows the homepage of the Saint Mary's University Campus Life website. At the top, there is a navigation bar with links for "Campus Life", "Share", and social media icons. Below the navigation is a large photo of a person jogging along a path near a body of water. To the right of the photo is a sidebar with a blue header containing links to various campus services. The main content area features several sections: "Your SMU tour starts here." with a link to a virtual tour, "Get Involved" with a link to clubs and societies, "New to SMU" with a link to introductory information, "Health & Wellness" with a link to SMUH resources, and "Counselling Services" with a link to counseling services.

The Saint Mary's Spirit
Residences & Housing
Meal Plans & Food Options
Athletics & Recreation (SMURO)
Student Association (SMUSA)
Student Leadership
Career Services
Student Societies
Health & Wellness
Getting Around
Welcome Week
Campus Services
Service Learning
Pride in Your Shared Neighbourhood
Services for Students with Disabilities
Art Gallery
Chaplains

Your SMU tour starts here.

Virtual Tour » A typical day in the life of a student

Get Involved » Join one of our Clubs and Societies

New to SMU » Everything you need in one place

Health & Wellness » SMUH Resources

Counselling Services » Home sick, need advice, stressed? Try our counseling services.

Biology: The scientific study of life

Often organized into many different levels:

- 1. Molecules
 - 2. Organelles
 - 3. Cells
 - 4. Tissues
 - 5. Organs & organ systems
 - 6. Organisms
 - 7. Populations & other taxonomic levels
 - 8. Communities
 - 9. Ecosystems
 - 10. The Biosphere
-
- The diagram illustrates the organization of biological levels into two main categories. On the left, a vertical dashed line separates the first five levels (Molecules to Organ systems) from the remaining five (Populations to Biosphere). A horizontal dashed arrow points from the bottom of this line to the text 'BIOL 1201'. On the right, another vertical dashed line separates the last five levels (Populations to Biosphere) from the top five. A horizontal dashed arrow points from the bottom of this line to the text 'BIOL 1202'.

Questions?