

Course ID:	Course Title:	Fall 2017
BCH 367	Laboratory Techniques in Biochemistry and Molecular Biology	Prerequisite: one of BIO 131/133 and CHE 101/103
		Credits: 3

Class Information		Instructor Information		Important Dates	
Days:	Tuesday	Instructor:	Dr. Chris Wang	First day of classes:	Wed., Sept. 6
Time:	8:15 – 11:00	Email:	chris.wang@ambrose.edu	Last day to add/drop, or change to audit:	Sun, Sept 17
Room:	A 2151	Phone:	(403) 410-2000 ext. 6910	Last day to request revised exam:	Mon, Oct. 23
Lab/ Tutorial:		Office:	L 2113	Last day to withdraw from course:	Mon, Nov 13
		Office Hours:	Wednesday and Friday: 11 am – 12 pm or by appointment (open door policy)	Last day to apply for coursework extension:	Mon, Nov 20
Final Exam:	Dec. 05, 2017			Last day of classes:	Mon, Dec 11

Course Description

An introduction to the most common lab techniques used in biochemistry and molecular biology. The general purpose is to guide students through an array of crucial experiment protocols that will help them continue any lab work they choose to pursue in biochemistry and molecular biology.

Expected Learning Outcomes

By the completion of this course, students should:

- have basic understandings of the background and theory of basic molecular biology techniques currently used in industry and research labs
- be comfortable with essential research skills, such as organizing and conducting experiments efficiently and independently, troubleshooting problems, identifying caveats, analyzing and interpreting results, and communicating research findings
- be able to use skills learned to carry out molecular biology researches from experimental design to data publication

Textbooks

- no textbook required for this course

recommended readings:

- Watson, J.D., T.A. Baker, S.P. Bell, A. Gann, M. Levine, R. Losick. 2014. Molecular Biology of the Gene. 7th edition. Benjamin Cummings.
- Lodish, H. A. Berk, P. Matsudaira, C.A. Kaiser, M. Krieger, M.P. Scott, S.L. Zipurski, and J. Darnell. 2004. Molecular Cell Biology. W.H. Freeman & Co., New York, NY.
- Sambrook, J., and D.W. Russell. 2001. Molecular Cloning. A Laboratory Manual. CSHL Press, Cold Spring Harbour, NY.

recommended web sites:

- biomedical literatures: <https://www.ncbi.nlm.nih.gov/pubmed/>
- National Center of Biotechnology Information (NCBI): <https://www.ncbi.nlm.nih.gov/>
- SIB Bioinformatics Resource Portal (ExPaSy): <https://www.expasy.org/>
- Free Reference Management Software: <https://www.mendeley.com/>

Required Materials:

- one bound notebook (can be obtained from the bookstore)



Course Schedule:

DATE	TOPICS
Sep. 12	Introduction to lab techniques in science <ul style="list-style-type: none">▪ WHMIS and biosafety▪ general lab procedures▪ lab notebook
Sep. 19	making reagents: <ul style="list-style-type: none">▪ LB broth▪ LB agar plates▪ ampicillin and kanamycin stocks Yeast-two hybrid
Sep. 26	bacterial plasmid purification <ul style="list-style-type: none">▪ miniprep primer designed and ordering
Oct. 03	restriction digest polymerase chain reaction (PCR)
Oct. 10	gel electrophoresis and PCR purification
Oct. 17	ligation of DNA fragment into bacterial plasmid
Oct. 24	transformation expression of bacterial recombinant protein
Oct. 31	SDS-PAGE and immunoblotting Lab Report 1 Due
Nov. 07	<i>Fall Module Week – No Regular Classes</i>
Nov. 14	immunoblotting
Nov. 21	bioinformatics – Part I Lab Report 2 Due
Nov. 28	bioinformatics – Part II
Dec. 05	Final Project Due Lab Final Exam

Attendance:

- students are required to attend All the scheduled lab and evaluation sessions
- a medical note (original and dated) is required to justify for the absence

Grade Summary:

Percent (%) to Letter Grade Conversion	Grade	Grade Point	Description
90.00% - 100%	A+	4.0	Excellent
85.00% - 89.99%	A	4.0	
80.00% - 84.99%	A-	3.7	
77.00% - 79.99%	B+	3.3	Good
73.00% - 76.99%	B	3.0	
70.00% - 72.99%	B-	2.7	
67.00% - 69.99%	C+	2.3	Satisfactory
63.00% - 66.99%	C	2.0	
60.00% - 62.99%	C-	1.7	
55.00% - 59.99%	D+	1.3	Minimal Pass
50.00% - 54.99%	D	1.0	
00.00% - 49.99%	F	0	
			Fail

Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously.

Please note that final grades will be available on student registration system. Printed grade sheets are not mailed out.

Evaluation:

Evaluation Methods	Due Date	Weighting
assignments - work in a group of two	multiple	30%
lab notebook – individual work	Dec. 05	5%
lab report 1 (cloning) – individual work	Oct. 31	10%
lab report 2 (protein) – individual work	Nov. 21	15%
Research grant proposal project – group/individual work	Dec. 05	20%
lab final exam – individual work	Dec. 05	20%

Lab Partners:

Name	E-mail	Cell

- it is recommended to have a mix of group members between first/second year with third/fourth year
- members should be able to cover each other's time table

Assignments and Lab Reports:

- follow the style of a scientific article, including: Abstract, Introduction, Material and Methods, Results, Discussion, and References
- follow the format from Cell journal for both in-text citations and the reference list (<http://www.cell.com/cell/authors>)
- all the assignments and lab reports must be written in your own words (*i.e.* no copy and paste from internet or plagiarism)

Others:**Student Development and Support:**

- <https://ambrose.edu/campus-life/student-success>

● Ambrose Writing Centre:

- Beth Gripping
- email: writingcentre@ambrose.edu
- phone: (403) 410-2000 ext. 5904

● Ambrose Tutorial Service:

- same as above

● Accessibility:

- email: accessibility@ambrose.edu

Ambrose University Academic Policies:

Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a "Request to Withdraw from a Course" form or by sending an email to the Registrar's Office by the **Withdrawal Deadline**; please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of "W" will appear on their transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Exam Scheduling

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devices in class. The professor has the right to disallow the student to use a

laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Note: Students are strongly advised to retain this syllabus for their records.