

Course ID:	Course Title:	Winter 2019
BIO 493	Optimizing PCR for the <i>SLC6A3</i> gene	Prerequisite: 15 credits of relevant senior courses in BIO, BCH, or ZOO
		Credits: 3

Class Information		Instructor Information		Important Dates	
Days:		Instructor:	Dr. Matthew Morris, PhD	First day of classes:	Thu, Jan 3
Time:		Email:	Matthew.Morris@ambrose.edu	Last day to add/drop, or change to audit:	Sun, Jan 13
Room:		Phone:	403-410-2000 ext. 6932	Last day to request revised exam:	Mon, Mar 11
Lab/ Tutorial:		Office:	A2158	Last day to withdraw from course:	Fri, Mar 22
		Office Hours:	By appointment	Last day to apply for coursework extension:	Fri, Mar 29
Final Exam:				Last day of classes:	Fri, Apr 5

Course Description

This course is a one-semester research project. Students will choose a research topic of choice, perform a literature review, perform scientific experiments, data analysis, and complete a research paper and presentation on the work.

In this particular project, the student will optimize a Polymerase Chain Reaction (PCR) protocol that can discriminate between two variants of the *SLC6A3* gene; by running the product through an agarose gel, the variant can be identified.

Expected Learning Outcomes

The student will:

1. Identify cheap ways of successfully extracting DNA.
2. Design and implement a PCR protocol, providing tweaks to improve performance.
3. Optimize conditions for PCR such that the least amount of chemicals are used that can still produce consistent results.
4. Optimize gel electrophoresis to best visualize the DNA.
5. Learn how to keep a scientific notebook.
6. Improve oral and written scientific communication skills.
7. Provide a justification for the importance of this particular research.

Textbooks

NA

Course Schedule

The schedule will be loose, but will require the following:

- i. At least three hours of work per week, not including reading break, beginning the week of January 7, 2019
- ii. Biweekly meetings with the instructor, for at least thirty minutes per meeting
- iii. Weekly emails to the instructor updating him about the goings-on of the past week and plans for the coming week
- iv. Completion of the lab portion of the project prior to Ambrose Research Conference (March 27)

Requirements:

Completed lab book – 20%

Experimental paper (literature review in introduction and discussion; materials and methods, results) – 50%

Ambrose Research Conference presentation – 15%

Participation – 15%

Weekly emails

Bi weekly meetings

Following lab safety

Cleaning up after each session in the lab

The student is expected to have completed WHMIS training and abide by all lab rules.

Attendance:

There are no set hours for this class. However, I expect at least 3 hours of work per week, not including time spent waiting for the thermocycler. If a week is not spent in the lab, it is spent reading or writing in preparation for the term paper.

Note that it is your responsibility to notify me before conducting lab work, so that I can be present or available in case of emergency. Also note that the labs are in use throughout the semester – you will need to arrange your schedule such that you can make use of the labs when the labs are not in use.

Grade Summary:

The available letters for course grades are as follows:

Grad	Percent	Grade Point Value	Description
A+	96-100	4.00	Outstanding
A	92-96	4.00	Excellent - superior performance, showing comprehensive understanding of subject matter.
A-	88-92	3.70	
B+	83-88	3.30	
B	78-83	3.00	Good-clearly above average performance with knowledge of subject matter generally complete.
B-	73-78	2.70	
C+	68-73	2.30	
C	64-68	2.00	Satisfactory – basic understanding of the subject matter. Grade point average below 2.00 is not sufficient for promotion.
C-	60-64	1.70	Minimum grade required if needed as a prerequisite course
D+	55-60	1.30	
D	50-55	1.00	Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.
F	<50	0	Fail – unsatisfactory performance or failure to meet course requirements.

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.

Plagiarism policy

See below for Ambrose's statement defining plagiarism and outlining its consequences. In brief, it is your responsibility as a citizen of Ambrose to be aware of the policies of Ambrose and abide by them. Ignorance is no excuse. Plagiarism will not be tolerated.

Examples of plagiarism include, but are not limited, to:

1. Copying an assignment from someone else and submitting it as your own work.
2. Working with a friend and writing down identical answers, whether you understand the content or not.
3. Quoting directly from a source without supplying quotation marks or a citation.
4. Quoting directly from a source without supplying quotation marks, even if it is referenced.
5. Quoting nearly word-for-word from a source, changing only the occasional word, even if it is referenced.

6. Submitting an assignment in which >30% of the content is properly quoted and cited; that is, at least 70% of the words in an assignment need to be your own. A general rule of thumb: for every line quoted, there should be three lines of your own material.
7. Submitting the same or similar assignment for more than one class, or more than one iteration of the same class.
8. Not citing illustrations used in a paper.

A tutorial explaining some of the above can be found at:

<http://library.acadiau.ca/sites/default/files/library/tutorials/plagiarism/>

Penalties for plagiarism

For a first offense in any one of my classes, a zero on the assignment with no chance of rewriting it, and a note in your academic file.

For a second offense in any one of my classes, a zero in the class, and a notice on your transcript.

For a third offense in any one of my classes, recommendation for expulsion from the university.

Note that Ambrose has an appeal process in place if you feel that allegations of plagiarism were unfounded.

Note that my record of a student's past plagiarism does not reset with each semester or class.

Email and Personal Etiquette:

Emails are a formal means of communicating with the course or lab instructor. As such, they should begin with "Dear Dr. _____". They should be courteous and respectful.

Aggressive, foul, or disrespectful language, whether in person or over email, will not be tolerated and could result in disciplinary action taken by the university.

Do not expect responses on evenings or weekends. Do not expect to have questions pertaining to assignments or exams answered on the day that the assignment is due or the exam is to be written.

Respect the lab space; abide by the rules as posted on the lab doors, and abide by your lab safety training through WHMIS.

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. 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.