



CUMMING SCHOOL OF MEDICINE
GRADUATE COURSE OUTLINE

COURSE TITLE:			
Course	MDSC 641.04 GENOMICS		
Pre/Co-Requisites	Medical Science 408 or Cellular, Molecular and Microbial Biology 413 or consent of the instructor.		
Faculty	Cumming School of Medicine, Graduate Science Education		
Instructor Name(s)	Dr. Bob Argiropoulos Dr. Tamas Revay	Email	bargiop@ucalgary.ca tamas.revay@albertaprecisionlabs.ca
Office Location	ACH B0-153	Office Hours	By appointment only.
Instructor Email Policy	Will respond within 24 hours.		
Telephone No.	Dr. Argiropoulos – 403-955-7864; Dr. Revay – 403-955-7377		
Class Term, Days	Fall 2020, Tuesdays and Thursdays		
Class Times	1:30 pm to 2:50 pm		
Class Location	TBA		

This course is offered in a face-to-face format. When unable to participate live and in person due to the time difference or unforeseen circumstances, inform the instructor in advance and propose and implement an alternative participation activity.

COURSE INFORMATION/DESCRIPTION OF THE COURSE
This course examines the strategies and techniques used in genomic and genetic studies. Reviews how genome editing is used in model systems to establish the functional consequences of genomic variation. Students can expect to gain a comprehensive understanding and broad appreciation of the significance of genomic information in the context of rare and common human diseases and genome biology.
LEARNING RESOURCES/REQUIRED READING
There is no assigned textbook for this course. Required reading from primary literature will be assigned.

COURSE OBJECTIVES/LEARNING OUTCOMES

By the end of this course, students will be able to:

1. Recognize how genomic information has been used to identify the underlying cause of genetic disorders and enhance our understanding of biological systems.
2. Be familiar with current genomic methodologies and databases and develop an appreciation for the quantitative and qualitative concepts underlying these processes.
3. Appreciate the complex ethical, legal and social issues that accompany genomic data and its applicability.

CUT POINTS FOR GRADES

This course adheres to the grading system outlined in the University of Calgary, Faculty of Graduate Studies Calendar. Grades of A+ and A are not distinguished in the calculation of GPAs. Percentage/letter grade conversion used for this course is as follows

Grade	Grade Point Value	Percentage Conversion	Graduate Description
A+	4.00	95-100	Outstanding
A	4.00	85-94	Excellent – superior performance showing comprehensive understanding of the subject matter
A-	3.70	80-84	Very Good Performance
B+	3.30	75-79	Good Performance
B	3.00	70-74	Satisfactory Performance
B-	2.70	65-69	Minimum Pass for Students in the Faculty of Graduate Studies
C+	2.30	55-64	All grades below 'B-' are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements
C	2.00	50-54	

Assessment Components: The University policy on grading related matters is outlined in the [2019-2020 Calendar](#).

Assessment Methods	Description	Weight %	Due Date <u>and</u> Time
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Oral Presentation	Presentation on assigned topic relating to Genomics.	20	TBA
Oral Presentation	Presentation on assigned article relating to Genomic	20	TBA
Assignments	Four Take home assignments involving problem sets.	10%, 10%, 5%, 5%	Sept. 22, Oct. 8, Oct. 29, Nov. 19.
Term paper abstract	Short description of term paper	5%	Nov. 7
Term paper	Written assignment on assigned topic relating to Genomics	20%	Dec. 4
Participation	Classroom or zoom participation	5%	

ASSESSMENT AND EVALUATION INFORMATION

ATTENDANCE AND PARTICIPATION EXPECTATIONS:

As 5% of the final mark is based on participation, we strongly advise that you show up to all teaching sessions (in person or on Zoom), ask questions and engage in class discussions.

GUIDELINES FOR SUBMITTING ASSIGNMENTS:

All Assignments will be submitted electronically through D2L in a designated dropbox by the due date at 1:30pm.

Brightspace (by D2L) is located on the University of Calgary server and will be used extensively for communication with students. **It is the student's responsibility to ensure that they receive all posted communications and documents and that they receive emails sent by instructors or fellow students through D2L.** Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account. A laptop, desktop, tablet or mobile device is required for D2L access. If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

FINAL EXAMINATIONS: There is no final exam for this course.

EXPECTATIONS FOR WRITING:

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary's emphasis on the importance of academic writing in student assignments (section E.2 of 2019-20 Calendar), writing is emphasized, and the grading thereof in determining a student's mark in this course. The Bachelor of Health Sciences values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). The University of Calgary offers a number of instructional services through the Students' Success Centre's Writing Support Services



(<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

LATE AND/OR MISSING ASSIGNMENTS:

At the instructor’s discretion, late assignments will not be accepted and will automatically receive a mark of zero. In this case, assignments will NOT be accepted more than 72 hours after the posted deadline and students failing to submit any assignment within this time frame will receive a mark of zero. Students who miss a quiz will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.

It is the agreement of all Faculty and Staff involved in MDSC 545 that **extensions will NOT be granted** on any assignment or quizzes. The only exceptions to this are those in keeping with the University Calendar (illness, religious conviction, or domestic affliction) that are received in writing and with supporting documentation. Please be advised that students should notify the instructor before the assignment deadline to discuss.

Is a passing grade on a particular component essential to pass the course as a whole? NO. Please note that students who do not complete the two major components of the course will be considered as not having completed the course; this will be reflected on the students’ official transcript as ‘Incomplete’. Major components of the course include the Topic and Article review presentations and the Term Paper. In the absence of medical or other documented reasons, the instructor reserves the right to award an ‘Incomplete’.”

COURSE TIMETABLE		
Course Schedule Date	Topic	Instructor
Tues. Sept. 1	Course overview and historical perspective	Dr. Bob Argiropoulos
Thurs. Sept. 3	Anatomy of the Genome	Dr. Bob Argiropoulos
Tues. Sept. 8	Genomic Technologies I	Dr. Bob Argiropoulos
Thurs. Sept. 10	Sequence Analysis – Bioinformatics	Dr. Paul Gordon
Tues. Sept. 15	Genomic Technologies II	Nerea Jimenez
Thurs. Sept. 17	Genomic Variant Analysis	Dr. Ryan Lamont

Tues. Sept. 22	Genome Editing	Dr. Sarah Childs
Thurs. Sept. 24	Cytogenomics	Dr. Tamas Revay
Tues. Sept. 29	Genomic Medicine	Dr. Bob Argiropoulos
Thurs. Oct. 1	Cancer Genomics	Dr. Tara Spence
Tues. Oct. 6	Cell free DNA	Dr. Steven Greenway
Thurs. Oct. 8	Epigenomics	Dr. Bob Argiropoulos
Tues. Oct. 13	Topic presentations	Drs. Argiropoulos & Revay
Thurs. Oct. 15	Article presentations	Drs. Argiropoulos & Revay
Tues. Oct. 20	Comparative Genomics	Dr. Tamas Revay
Thurs. Oct. 22	Mitochondrial Genomics	Dr. Tim Shutt
Tues. Oct. 27	Topic and Article review presentations	Student led
Thurs. Oct. 29	Topic and Article review presentations	Student led
Tues. Nov. 3	Topic and Article review presentations	Student led
Thurs. Nov. 5	Topic and Article review presentations	Student led
Tues. Nov. 10 and Thur. Nov. 12	Term Break, No classes	Student led
Tues. Nov. 17	Topic and Article review presentation	Student led
Thurs. Nov. 19	Topic and Article review presentation	Student led
Tues. Nov. 24	Topic and Article review presentation	Student led
Thurs. Nov. 26	Topic and Article review presentation	Student led
Tues. Dec. 1	Topic and Article review presentation	Student led
Thurs. Dec. 3	Topic and Article review presentation	Student led
Tues. Dec. 8	Ethics in Genomic Medicine	Amy Davis and Natasha Lemiski Genetic counsellors



INTERNET AND ELECTRONIC COMMUNICATION DEVICE INFORMATION

Cell phones must be turned off in class unless otherwise arranged with the instructor.



The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. Students are to refrain from accessing websites that may be distracting for fellow learners (e.g. personal emails, Facebook, YouTube). Students are responsible for being aware of the University's Internet and email use policy, which can be found at <https://www.ucalgary.ca/policies/files/policies/electronic-communicationspolicy.pdf>.

MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

Media recording for lesson capture

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

Media recording for assessment of student learning

The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

Media recording for self-assessment of teaching practices

The instructor may use media recordings as a tool for self-assessment of their teaching practices. Although the recording device will be fixed on the instructor, it is possible that student participation in the course may be inadvertently captured. These recordings will be used for instructor self-assessment only and will not be used for any other purpose.

Student Recording of Lectures

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

ACADEMIC ACCOMMODATIONS

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>



IMPORTANT INFORMATION

Any research in which students are invited to participate will be explained in class and approved by the appropriate University Research Ethics Board

COPYRIGHT

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students (library.ucalgary.ca/files/library/guidance_for_students.pdf). Further information for students is available on the Copyright Office web page (<https://library.ucalgary.ca/copyright>)

A NOTE REGARDING INSTRUCTOR INTELLECTUAL PROPERTY

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor (s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course *at the same time* may be allowed under fair dealing

ACADEMIC INTEGRITY

The Cumming School of Medicine expects intellectual honesty from its students. Course participants should be aware of University policies relating to Principles of Conduct, Plagiarism and Academic Integrity. These are found in the printed Faculty of Graduate Studies Calendar, or online under Academic Regulations in the Faculty of Graduate Studies Calendar, available at [Faculty of Graduate Studies Academic Regulations](#)

ACADEMIC MISCONDUCT

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

EMERGENCY EVACUATION AND ASSEMBLY POINTS

Assembly points for emergencies have been identified across campus. The primary assembly points for South Campus (Health Science Centre (HSC); Health & Research Innovation Centre (HRIC); Heritage Medical Research Building (HMRB) and Teaching, Research and Wellness (TRW)) are:

- HSC and HMRB: HRIC Atrium (alternate assembly point is Parking Lot 6)
- HRIC: HMRB Atrium (alternate assembly point is Parking Lot 6)
- TRW: McCaig Tower (alternate assembly point is HMRB – Atrium)

APPEALS

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section N of the Faculty of Graduate Studies Calendar. Students must follow the official process and should contact the Student Ombuds Office (<http://www.ucalgary.ca/provost/students/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct

THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY (FOIP) ACT



This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP) and students should identify themselves on written assignments (exams and term work.) by their name and ID number on the front page and ID on each subsequent page. Assignments given by you to your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission

WELLNESS AND MENTAL HEALTH RESOURCES

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre), <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services> and the Campus Mental Health Strategy website <https://www.ucalgary.ca/mentalhealth/>

SUPPORTS FOR STUDENT LEARNING, SUCCESS, AND SAFETY

Student Ombudsman: The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/ombuds/ or email ombuds@ucalgary.ca

Student Union: The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; Information about the SU, including elected Faculty Representatives can be found here: <https://www.su.ucalgary.ca>

Graduate Student's Association: The GSA Vice-President Academic can be reached at (403) 220- 5997 or gsa.vpa@ucalgary.ca; Information about the GSA can be found here: <https://gsa.ucalgary.ca>

SAFEWALK

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.