

4. **Missed Components Of Term Work:**

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section M.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hours.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize themselves with these regulations. See also Section E.3 of the University Calendar.

5. **Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

6. **Course Materials:**

There is no course textbook. All required and recommended readings will come from the primary literature and review articles indicated in the lecture notes and assignment.

7. **Examination Policy:**

No aids are allowed on tests or examinations.

Students should also read the Calendar, Section G, on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing across the Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.

10. **Human & Living Organism Studies Statements:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students taking laboratory and field based courses in these disciplines can expect involvement with the experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concerns they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

11. **Reappraisal of Grades:**

A student wishing a reappraisal should first attempt to review the graded work with the Course Coordinator/ Instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the

grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within 15 days of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections I.1 and I.2 of the University Calendar.
- b. **Final Exams:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

12. Other Important Information for Students:

- a. **Mental Health:** 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 resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 30, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208.
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K, Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email addy@ucalgary.ca or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See Section E.4 of the University Calendar.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- i. **Student Union Information:**
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Schedule	Preliminary Title
Sept 6	Introduction to Systems Biology, Functional Genomics and Molecular Networks
Sept 9	Genome Sequencing 1: Shotgun Sanger Sequencing
Sept 11	Genome Sequencing 2: Sequence Assembly and Gene Finding
Sept 13	Genome Sequencing 3: Next Generation Sequencing 1
Sept 16	Genome Sequencing 4: Next Generation Sequencing 2
Sept 18	Genome Sequencing 5: Genome structure and evolution
Sept 20	Expression Microarrays 1: Transcriptome, platforms and procedure
Sept 23	Expression Microarrays 2: Data normalization and clustering analysis
Sept 25	Tiling Microarrays
Sept 27	Forward Genetics 1: Mutagenesis and mutant alleles
Sept 30	Forward Genetics 2: Gene Mapping and Plasmid Complementation
Oct 2	Reverse Genetics 1: Construction and characterization of the yeast deletion collection
Oct 4	Reverse Genetics 2: Chemical genetic profiling
Oct 7	Reverse Genetics 3: Essential genes (TET, DAMP and TS alleles)
Oct 9	Reverse Genetics 4: Multicellular organisms
Oct 11	Reverse Genetics 5: RNAi and CRISPR screening in cancer cells
Oct 14	THANKSGIVING DAY: NO LECTURES
Oct 16	Introduction to Transcriptional-Regulatory Networks
Oct 18	Transcription Factor Overexpression 1: Phenotypic activation of yeast transcription factors
Oct 21	Transcription Factor Overexpression 2: Motif-finding algorithms and validation of target genes
Oct 23	IN-CLASS MIDTERM
Oct 25	Workshop: Career Planning, Strategies and Opportunities
Oct 28	Transcription Factor Overexpression 3: Reprogramming differentiated cells into embryonic stem cells
Oct 30	Chromatin Immunoprecipitation 1: ChIP-chip analysis of transcription factors
Nov 1	Chromatin Immunoprecipitation 2: Global analysis of chromatin-modifying proteins
Nov 4	One Hybrid Yeast Assay
Nov 6	Introduction to Posttranscriptional Regulation and RNA-Binding Proteins
Nov 8	Protein-RNA Interactions 1: RIP-Chip/Seq

Nov 11	REMEMBRANCE DAY: NO LECTURES
Nov 13	READING BREAK: NO LECTURES
Nov 15	READING BREAK: NO LECTURES
Nov 18	Translational Control and Ribosome Profiling/Ribo-Seq
Nov 20	Approaches in Proteomics 1: Antibody-based tissue profiling and yeast two hybrid assay
Nov 22	Approaches in Proteomics 2: Mass spectrometry
Nov 25	Approaches in Proteomics 3: Protein microarrays
Nov 27	Protein-Protein Interaction Networks: Topology and conservation
Nov 29	Synthetic Genetic Array Analysis 1: Large-scale genetic interaction mapping in yeast 1
Dec 2	Synthetic Genetic Array Analysis 2: Large-scale genetic interaction mapping in yeast 2
Dec 4	Synthetic Genetic Array Analysis 3: Genetic interaction networks in <i>C. elegans</i>
Dec 6	Review

Course Outcomes

- Describe and compare technologies for whole genome sequencing including Sanger and Next-Generation Sequencing
- Describe approaches in forward and reverse genetics to determine gene function in eukaryotic model systems
- Describe genome-wide methods to identify target genes of transcription factors and the topology of transcriptional-regulatory networks
- Apply knowledge learned from expression microarrays to normalize and analyze transcriptome data
- Explain the concept of synthetic lethality and describe large-scale genetic mapping by synthetic genetic array technology in the yeast model system
- Describe proteomic methods to identify protein interactions and complexes.
- Explain functional genomic experimentation and data from the primary literature.