The University of British Columbia
Graduate Program in Bioinformatics Handbook

Last update: August 2023

The Graduate Program in Bioinformatics acknowledges with gratitude and respect that its members learn, study and work on the traditional, ancestral, and unceded territories of the xʷməθkʷəy̓əm (Musqueam), seĺíĺwitulh (Tsleil-Waututh), and sḵwx̱wú7mesh (Squamish) Coast Salish peoples.

Table of Contents

Bioinformatics Graduate Program Director's Welcome

On behalf of all the faculty and staff in our program, a very warm welcome from the Graduate Program in Bioinformatics! I am thrilled that you have chosen the University of British Columbia for your graduate degree in the Bioinformatics program.

For the next few years, the Graduate Program in Bioinformatics will be your academic home. It is our mission to foster a diverse, equitable, inclusive, and collaborative training environment that nurtures academic excellence as well as skills that translate to careers outside of academia.

We hope that you will take advantage of the full range of training opportunities that our program has to offer—core courses and electives, research, workshops and career events, and networking opportunities.

You can expect the program will be open to:

- Provide guidance on how to progress toward your degree.
- Be knowledgeable about applicable UBC Faculty of Graduate & Postdoctoral Studies (G+PS) policies and procedures.
- Ensure that minimum funding requirements are fulfilled.
- Assist and provide resources in times of distress or mental health problems, and have knowledge of available UBC resources for mental health and wellness.
- Listen to and assist students and supervisors in addressing conflicts in a confidential, impartial, and collaborative manner.
- Continuously learn from you to improve our program.

I invite you to read the Student Handbook and familiarize yourself with our guidelines and procedures, and to get in touch with us if you have any questions. The best way to reach us is through email at bioinformaticsprogram@bcgsc.ca (Sharon Ruschkowski, Graduate Program Coordinator).

One-on-one appointments can be made with me through my admin assistant (alroth@bcgsc.ca). I am located on the first floor of the Genome Sciences Centre (570 West 7th Avenue). I look forward to meeting you!

Sincerely,

Dr. Steven Jones
Director and Program Graduate Advisor, Bioinformatics
Faculty of Science, University of British Columbia

1. Foundational Pillars of the Graduate Program in Bioinformatics

The Graduate Program in Bioinformatics (BIOF) places learners in the centre of the training and research process. Aligned with the Faculty of Science and administered under the Michael Smith Laboratories at UBC, the Bioinformatics program aims at educating, developing and mentoring future and current researchers. The program rests on the following foundational principles:

- Mentorship: a supportive and resilient trainee-supervisor relationship is the foundation for our trainees' creativity and training success

- Research excellence: our faculty members are world experts in their fields and the research environment at UBC and affiliated sites are state-of-the-art

- Transferable skill training: we acknowledge trainees' diverse goals and career plans and offer opportunities to learn skills that transfer outside of academia

- Transparent Program Management: our program structure can be viewed here: **Appendix 1**

- Community: we believe in peer support and networking, and offer a range of inclusive, community-building activities

- Equity, Diversity, Inclusion (EDI): we strive to make our program's training and research environments and our admissions, award adjudication, and governance equitable, diverse, and inclusive

2. Justice, Equity, Diversity, and Inclusivity

2.1 Zero Tolerance for Discrimination and Harassment

The Graduate Program in Bioinformatics is committed to promoting, providing, and protecting an inclusive, positive, supportive, and safe learning environment and workspace for all its members. The program continuously engages with diversity in all decision-making processes during admission and award adjudication. Our community strives to treat those, who are historically, persistently, or systematically marginalized, equitably. The BIOF Director and program Steering committee aim at bringing awareness of the importance of EDI to our program, and work on embedding EDI principles into the review process for all admissions and award adjudication decisions.

Any acts of harassment, discrimination, bullying or violence, and sexual misconduct, including gendered insults, are not acceptable in our classrooms, research laboratories, and all other areas in which our members interact. Examples of unacceptable behaviours include, but are not limited to, public humiliation, verbal abuse or taunting, creating an intimidating or hostile learning atmosphere, threatening behaviour, unwelcome physical contact, physical violence or violent gestures, offensive comments or behaviour regarding gender, race, ethnicity, religion (or lack thereof), sexual orientation, age, or disability.

The inherent power differential between trainees and supervisors may invoke feelings of intimidation or anxiety to perform well. This is not unique to graduate training but is common in many situations of training and job performance. The distinction between being intimidated and feeling pressure to function well should be understood by students and supervisors.

2.2 Reporting Mistreatment and Unprofessional Conduct

If you have experienced inappropriate behaviour as a graduate student in our program, or have witnessed such behaviour, we ask that you report it so that we may take steps to correct the problem and offer support. Please don't stay silent. You are not alone.

The following resources are available to you—either within the program, or across UBC—to report mistreatment or unprofessional conduct. Please feel free to choose the resource that feels right to you.

- Please talk to the Program Coordinator, Sharon Ruschkowski (bioinformaticsprogram@bcgsc.ca) Any communication will be treated as confidential.

- You can contact the Graduate Student Society (advocacy@gss.ubc.ca).

- You can contact the UBC Office of the Ombudsperson for Students (see "How We Can Help"), https://ombudsoffice.ubc.ca/.

- UBC-wide confidential emotional support and coaching are available through Counselling Services (https://students.ubc.ca/health/counselling-services) and/or the UBC Student Assistance Program (https://students.ubc.ca/health/ubc-student-assistance-program-sap).

2.3 Resources and Policies for EDI at UBC

UBC offers resources to navigate issues pertaining to EDI. Trainees should familiarize themselves with UBC's Student Code of Conduct (https://students.ubc.ca/campus-life/student-code-conduct), and the Respectful Environment Statement (https://hr.ubc.ca/working-ubc/respectful-environment).

The UBC Equity & Inclusion Office administers Policy #3, the UBC Policy on Discrimination and Harassment (https://equity3.sites.olt.ubc.ca/files/2016/08/policy3.pdf), which covers human rights-based discrimination and harassment.

UBC's Inclusion Action Plan (https://equity.ubc.ca/about/inclusion-action-plan/) emphasizes the importance of EDI and lays out specific goals and actions to achieve a truly inclusive academy.

3. Mental Health and Wellbeing

3.1 Mental Health as a Priority in the Bioinformatics program

The Graduate Program in Bioinformatics recognizes the enormous importance of mental health and wellbeing for our graduate students. The Graduate Student Society offers events and programs for relieving stress and anxiety (https://gss.ubc.ca/) as well as socialization with other students. In addition, UBC offers services for confidential counseling one-on-one (https://students.ubc.ca/health/finding-health-support)

3.2 Resources for Mental Health and Wellbeing

If you find yourself struggling with mental health, please do not hesitate to reach out to your supervisor, peers, and support network if you feel that your wellbeing and performance are impacted. We are not trained to offer counseling, but are dedicated to assist you in identifying resources.

Graduate students can struggle with issues related to self-doubt, perfectionism, work-life balance, strained supervisory relationships, financial stress, and many more. Talking to a professional can help you work through these problems and take steps toward your goals, in line with your values, strengths, and priorities. If you're feeling persistently stressed, anxious, or sad, it can help to speak with a counsellor. UBC offers counselling services for graduate students. (https://students.ubc.ca/health/counselling-services).

If you are in emergent distress:

- Call Crisis Center BC: 1-800-784-2433
- Call or visit VGH Access and Assessment Centre: 604-675-3700 (7:30 am to 11:00 pm)
- Visit your nearest hospital emergency room. In case of an emergency: Call 911

Faculty members assisting a student in distress are encouraged to submit an Early Alert report (https://facultystaff.students.ubc.ca/systems-tools/early-alert). If a faculty member informs you that an Early Alert has been filed for you, please consider it as an indicator of their care and concern, and not as a personal failure. An Early Alert report will not show up on your transcript. It is a confidential service that faculty can use to simply ask a counselor to follow-up with a student.

4. The Bioinformatics Graduate Student Handbook

This handbook contains important information, policies and procedures for all students and faculty in the program. It was developed by the Graduate Program Associate Director and Program Coordinator in consultation with students and faculty in the program.

All students receive a copy of this handbook upon entry into the program and are invited to use it as a reference guide as needed. Please note that all policies and procedures are in alignment with those laid out by the UBC Faculty of Graduate and Postdoctoral Studies (abbreviated G+PS). In case of disagreement between this handbook and G+PS guidelines, G+PS guidelines supersede Bioinformatics program guidelines. This handbook is updated annually and the most recent version will be posted to the BIOF webpage (www.bioinformatics.ubc.ca).

This document has been adapted from the handbook of the UBC Graduate Program in Neuroscience, which was designed by Dr. Miriam Spering. We are deeply appreciative of her contributions.

5. Information Sources and Who To Ask

5.1 Who is Who

Graduate Program Coordinator

Sharon Ruschkowski
Email: bioinformaticsprogram@bcgsc.ca
Phone: (604) 707-5803

Sharon is your point of contact for all administrative issues arising during your time in the Bioinformatics program including forms, registration, awards, program transfers (including when you are not sure who to contact). Please always contact Sharon first; she will forward or redirect your question or comments if needed.

Graduate Program Director

Dr. Steven Jones
Email: sjones@bcgsc.ca
Admin: alroth@bcgsc.ca

Graduate Program Associate Director

Dr. Paul Pavlidis
Email: paul@msl.ubc.ca

Finances: Salaries / Reimbursements or Advances

Unlike some other graduate programs, we are a cross-departmental program and as such, not responsible for your graduate stipend pay. At UBC, hiring and salary payments are handled by departments, not by research centres or programs. For any questions related to finance, such as stipend/salary/award/teaching assistantship payments as well as reimbursements for expenses please contact your supervisor's departmental administrative assistant/finance personnel. Throughout this handbook, we will refer to the department, which with your supervisor is primarily affiliated, as your home department. If you are unsure who to contact, please ask your supervisor or email bioinformaticsprogram@bcgsc.ca

Space / Access: Lab / Office / Common spaces / Access / Mail

If you have any issues related to your space, either your office or lab space, common spaces, how to access them, and where to get your mail: who to contact will depend on the building you work in. Typically, your supervisor will be able to direct you.

Graduate Student Society (GSS)

The GSS (https://gss.ubc.ca) is an organization of graduate students dedicated to serving the academic, social and cultural interests of its over 10,000 members. It coordinates orientation sessions for new students during late August/early September, and organizes many social events. BIOF has a representative and is available to answer your questions about GSS matters.

Bioinformatics Social Coordinator

The Bioinformatics social coordinator occasionally organizes program student events and activities, such as Pub nights and BBQs. The current social coordinator is Eric Lee (psylin223@gmail.com). If you want to be added to a student forum, please contact him to add your email to the list.

Graduate and Postdoctoral Studies (G+PS)

The Faculty of Graduate and Postdoctoral Studies (G+PS) coordinates and maintains the quality of all Master's and Doctoral programs at the University, administers awards and scholarships, as well as policies, procedures, and guidelines for graduate students across the campus. If you have policy questions, check with the BIOF Coordinator before contacting G+PS.

5.2 Where should I go for...

The following overview summarizes the information already provided. For each item, start at the top of each list provided and work your way down if your issue is not solved.

Procedural rules
1. This Handbook
2. BIOF website (https://www.bioinformatics.ubc.ca/)
3. UBC Graduate Studies website (https://www.grad.ubc.ca)
4. Contact the BIOF coordinator

Forms
1. Forms page, BIOF website (https://www.bioinformatics.ubc.ca/documents/)
2. UBC Graduate Studies website (https://www.grad.ubc.ca/forms)
3. Email signed forms to bioinformaticsprogram@bcgsc.ca

Information about Appointment, Pay or Reimbursements
1. Check Workday profile and pay slips
2. Contact your supervisor's departmental finance manager

Award information
1. Check your Applicant Service Centre (ASC) account
2. UBC Graduate Studies website
3. Contact the BIOF coordinator

Leaves of Absence
1. Supervisor
2. Contact BIOF Coordinator

Information on Postponing Tuition Payments
1. Apply for tuition deferral (https://students.ubc.ca/enrolment/finances/paying-tuition)

Problems or Conflicts with your Supervisor
1. Your Supervisory Committee members
2. Contact BIOF Coordinator

Problems or Conflicts Involving Peers
1. Supervisor
2. Contact BIOF Coordinator

How we stay in touch with you: our program distributes information through our email list. We also publish all communication from UBC, G+PS, and from within our own program through this email list. It is our main way of communicating directly with our trainees! As a graduate student in our program, you should automatically receive these emails. If you believe that you are not on our email list or change your preferred email address, please contact the BIOF coordinator.

6. Graduate Program in Bioinformatics Governance

6.1 Faculty of Science and Postdoctoral Education

The BIOF is administered by UBC's Faculty of Science (FoS). We are one of 21 graduate programs within the Faculty of Science. Bioinformatics and Genome Science & Technology graduate programs are administered by the Michael Smith Laboratories. The Associate Dean of Science functions as liaison between G+PS and the Graduate Program Directors / Graduate Advisors of each program.The Associate Dean's office plays the following important roles in the function of our graduate program:

- Allocation of university-level graduate awards, such as the 4-Year Fellowship

- Adjudication of awards, such as the FoS Graduate Student Awards

- Evaluation of our courses and curriculum

- Offering development and career advancement workshops across programs

- Providing resources for mental health and wellbeing

6.2 Faculty of Graduate and Postdoctoral Studies (G+PS)

At the university level, all graduate programs are overseen by the Faculty of Graduate and Postdoctoral Studies (G+PS) under the Dean of Graduate Studies (currently Dr. Susan Porter) and three Associate Deans, who are responsible for Academic (Dr. Laura Sly), Funding (Dr. Julian Dierkes), Graduate Programs and Program Development (Dr. Michael Hunt). G+PS monitors and improves the process that leads to a graduate degree at UBC. Typically, as a student, you will have no direct interaction with the Dean or Associate Deans, unless you serve on the Graduate Council (https://www.grad.ubc.ca/about-us/governance/graduate-council) as a Graduate Student Representative.

However, the G+PS plays the following important roles in the function of our graduate program:

- **Student funding**: G+PS mandates a minimum, guaranteed funding policy for PhD students, which has to be adopted (or exceeded) by all graduate programs. It also oversees the university budget for graduate awards and scholarships, and advocates for graduate funding from the province.

- **Supporting graduate program excellence**: G+PS offers administrative training to program directors/advisors, assists in external reviews of graduate programs, and provides resources to improve graduate supervision.

- **Degree progression**: Many workshops are offered throughout the year to help students progress through their degrees, such as "Candidacy to Completion" or "Graduate Pathways to Success" (https://www.grad.ubc.ca/strategic-priorities/supporting-student-development-success)

- **Progress and degree monitoring**: G+PS is involved with and regulates most administrative events and milestones in the lifetime of a graduate student, i.e., formation of the supervisory committee, the comprehensive examination, and the doctoral thesis completion, submission and defense. The G+PS also approves leaves of absence, transfers from one degree type to another (e.g., MSc to PhD), program withdrawals and extensions.

- **Student experience**: G+PS offers assistance and support for mental health, wellbeing, campus services such as housing, and other student needs. G+PS also maintains an alumni database.

You are encouraged to regularly check out the G+PS website and take full advantage of the fantastic resources offered there, for example, the Graduate Student Game Plan, a step-by-step guide from arriving to UBC to graduation

(https://www.grad.ubc.ca/current-students/professional-development/graduate-game-plan).

6.3 The Bioinformatics program Leadership

The Bioinformatics' leadership consists of the Graduate Program Director (Dr. Steven Jones), the Graduate Program Associate Director (Dr. Paul Pavlidis), and the Graduate Program Coordinator (Sharon Ruschkowski). The Director is a regular faculty member in the program who is responsible for the administration of graduate studies within the program, i.e., oversees admissions, award adjudication, students' supervision and progress through the program, curriculum development and delivery, and acts as a liaison between students / supervisors and the G+PS. The Associate Director provides expertise for major strategic initiatives and assists in all matters related to student progress. The Coordinator maintains all student records and

provides all necessary forms as well as information regarding processes within the program. The Coordinator position in the BIOF is a full-time staff position.

6.4 The Bioinformatics Steering Committee

Our program is committed to a management structure (see **Appendix 1**) that promotes clarity, transparency, and inclusivity. Our **Steering Committee** votes on new faculty members to the program, can terminate faculty membership, oversees the work of the Director, approves the budget, and advises the Director on program developments and strategic decisions. The Steering Committee consists of faculty members who represent a range of departments, disciplines, and career levels.

Three program committees support our operation,

- **Admissions Committee**: members of the admissions committee evaluate each application for admission to our program and create a shortlist of applicants that fulfill university, G+PS and BIOF requirements, are a good fit for our program, and are likely to be able to find a supervisor. The admissions committee also recommends candidates for 4-Year Fellowships.
- **Awards Committee**: the purpose of this committee is to evaluate, score, and rank award and scholarship applications by BIOF trainees. All awards are adjudicated based on the assessment criteria advertised for each award. In addition, the committee will use BIOF-internal information on applicants' diversity status to inform decision making with the aim to be equitable, fair, and inclusive in the process. The awards committee adjudicates applications for federal awards (Canada Graduate Scholarship Masters and Doctoral, Vanier), university and faculty awards (Affiliated Masters and Doctoral Awards) and any internal awards. It makes recommendations to G+PS or the Faculty of Science regarding eligible applicants and decisions on FoS awards.

- **Curriculum Planning Committee**: this committee is responsible for planning and revising our curriculum, consisting of core courses BIOF 501A and 520.

7. Research Ethics for Graduate Students

7.1 Responsible Conduct of Research (RCR) Course

https://grad-postdoc.med.ubc.ca/current-students/research-conduct-course/

All graduate students are encouraged to take the RCR course at the beginning of their graduate studies at UBC. This course is designed to give students a better understanding of norms and rules for responsible research conduct, provides the ability to know where and how to ascertain these, and improves the ability to make judgments on the ethics of the types of actions and decisions inherent in research.

Every stage of the research we conduct as members of BIOF is susceptible to conflicting interests, threats and biases, introduced, for example, by low statistical power due to small sample sizes, poor quality of data, p-hacking or HARKing (hypothesizing after the results are known). As a graduate program, we acknowledge the enormous pressure—career pressure, pressure from funding agencies, institutional and societal pressure—that our students and faculty members are under, and we encourage an open dialogue about ethical conduct of research.

Some of the best practices (field-dependent) that we would like to suggest are:

- Ensuring that a thesis research question is appropriate and justified
- Code should be version controlled using a resource like Github and data should be backed up on a UBC-sanctioned backup plan
- Clearly comment and test code, and engage in code review sessions with peers
- Maintain communication with the researchers who generated the data to better understand how its properties may influence analysis
- Understand what public data sets are available that may be complementary to your research question and clearly document how and when the data was acquired
- Keep a lab notebook that tracks your challenges and progress
- Understand the statistics to be used from the start, ensuring that additional classes or workshops are taken to acquire relevant knowledge
- Be very careful and detail-oriented when analysing, graphing and otherwise portraying data
- Get independent advice from supervisor, supervisory committee, mentor as well as others in the scientific community

7.2 Obtaining Ethics Approval for Research Studies

All researchers at UBC must obtain the appropriate research ethics board approvals prior to commencing any new research studies.

For the use of any biohazardous materials, biosafety approval must be obtained: https://ors.ubc.ca/compliance-reporting/compliance-requirements/biosafety

For the use of human subjects the appropriate approvals by the Behavioral Research Ethics Board or the Clinical Research Ethics Board must be in place. UBC's Behavioural Research Ethics Board (BREB) is responsible for reviewing behavioural or social sciences/humanities research, or research that may involve the study of patients or health care providers: https://ethics.research.ubc.ca/behavioural-research-ethics

UBC's Clinical Research Ethics Board (CREB) reviews research that involves surgery, clinical interventions, exercise programs, and/or the analysis of clinical data: https://ethics.research.ubc.ca/clinical-research-ethics

Depending on the location of your research, additional approval by the Hospital Ethics Board may be required, e.g., BC Cancer REB, Children's and Women's REB, or VCHRI approval https://ethics.research.ubc.ca/about-human-research-ethics/ethics-boards

8. The MSc program in Bioinformatics Program

The key to success in graduate education lies in your ability and willingness to be proactive – to take responsibility for your own graduate school experiences. Pursuit of a graduate degree is an important investment in your personal growth and future career. In BIOF, we offer two types of graduate degrees, a Master's of Science and a doctoral degree.

A Master's student typically enters the program with a Bachelor's degree and normally spends two years of full-time study at UBC, though it may take additional time. The G+PS stipulates that the maximum allotted time for an MSc degree is 5 years, and a minimum enrollment of at least 12 consecutive months is required. A period of a leave of absence does not count toward completion time. In order to extend the graduate program beyond 5 years, a formal extension

request is required and there must be sufficient rationale for doing so (see https://www.grad.ubc.ca/faculty-staff/policies-procedures/extension).

8.1 MSc Degree Milestones

8.1.1 Coursework

In the first year, the student usually takes the required course work. In BIOF, these courses consist of the two core courses BIOF 501A and 520, and four further elective courses for a total of 18 credits. Whereas BIOF 501A and 520 are typically taken in year 1, electives can be taken at any time in year 1 or 2.

Please note: students **must** be perpetually enrolled in BIOF 599 (thesis course) throughout the entire duration of their Master's degree. Course requirements for the MSc program are the same regardless of the student's home department (a student's supervisor's primary department).

8.1.2 MSc Research

In the first year of study, the student also begins research under their supervisor's direction. The supervisory committee gives ongoing advice and guidance, and may recommend further course work. By the start of the second year, a provisional thesis research proposal should be approved by the supervisory committee. Typically, a second committee meeting is held in the second year.

Toward the end of the second year (or in the third year), a written thesis will be completed and submitted to the supervisory committee for evaluation. Following a successful oral defense and submission of the finalized thesis to the Faculty of Graduate Studies, the student is eligible for graduation.

The G+PS offers the Graduate Game Plan (https://www.grad.ubc.ca/current-students/professional-development/graduate-game-plan), a tool that can help you plan your degree from admission to completion in detail. For a Master's student in our program, the key milestones, following a two-year timeline, are the following:

- **End of Year 1**: course work completed; supervisory committee established and has met once to approve the thesis proposal

- **End of Year 2**: research work completed; second committee meeting to prepare writing the thesis

- **Graduation**: thesis written and submitted; oral defense successfully completed

8.2 Degree Progress

8.2.1 Annual Committee Meetings

G+PS requires that graduate students meet with their full committee at least once a year. All new students are encouraged to form their committee within the first term of graduate studies, and to meet with their committee within the first six months of starting the program.

8.3 MSc Thesis Requirements and Oral Defense

8.3.1 Thesis Requirements

MSc students are required to conduct research towards their degrees. Although research conceived and conducted independently is encouraged, the minimum requirement for an MSc

degree is to successfully complete directed research. It is the responsibility of the supervisor, with assistance of the supervisory committee, to provide and co-develop a suitable project that can be completed within two years.

The project should be of publishable quality, but need not extend beyond the equivalent of a single paper, and does not need to be published. It may constitute part of a larger body of work, shared between several students and projects.

Consult the G+PS pages for further information on thesis preparation and formatting (https://www.grad.ubc.ca/current-students/dissertation-thesis-preparation). These pages also contain a sample thesis: https://www.grad.ubc.ca/sites/default/files/doc/page/sample_thesis.pdf

8.3.2 Thesis Approval and MSc Examination

After approval by the supervisor, copies of the thesis must be distributed to the members of the student's supervisory committee for approval, with at least two weeks allowed for reading and comments. After the thesis has been approved by the committee, the scheduled exam may proceed.

For the MSc examination / oral defense, the presence of the supervisor, two supervisory committee members and a Defense Chair constitutes a quorum. Any faculty member holding at least Associate Faculty status, and who is not on the student's committee, can serve as Defense Chair. The Chair is secured by the student and/or supervisor.

Detailed instructions for the Chair are available on our webpage, under "MSc Program Resources—MSc Defense Chair Instructions" (https://www.bioinformatics.ubc.ca/documents/). An audience is welcome and encouraged. The examination typically proceeds as follows:

- **Presentation:** The student will present a brief summary of their thesis (not to exceed 20 minutes in length).

- **Questioning:** Each examiner then asks questions for 15-20 min, with the option of a brief second round for follow-up questions.

- **In-camera session:** Following the examination, the candidate and audience members are asked to leave the room and the committee will hold an in-camera session.

  - Each member of the examining committee gives an opinion of the student's performance (pass/fail) during the examination and for the written thesis.
    The examining committee may recommend that the thesis is acceptable in the form presented, or it may request changes be made to the thesis before the title page is signed. The supervisor is responsible for ensuring that such changes are made.

  - **Pass:** If the examination and thesis are a pass, the BIOF MSc Thesis Grade form can be signed .

  - **Fail:** A fail will be assigned if at least two of the three examiners assign a failing grade, and it must be accompanied by a written summary outlining the reasons for this decision. There is no recourse for a student who fails the exam.

- **Signing:** The Chair will then recall the student and announce the decision and grade. The Chair may suggest at this time that the Thesis Approval Form be signed by the committee or may ask that the student first makes required revisions.

- The Thesis Approval Form (https://www.grad.ubc.ca/forms/masters-thesis-approval) confirms the committees' approval for submission of a defended thesis. It will either be submitted to the Graduate Program Coordinator immediately following the MSc Examination, or as soon as all required changes to the thesis have been made. The Program Coordinator will then submit the Thesis Approval Form to G+PS.

- The Chair will also complete a BIOF MSc Thesis Grade form and Chair Report and submit it to the Graduate Program Coordinator in a timely manner.

● **Submission:** Once all members of the Examining Committee have signed the Thesis Approval Form, the candidate will submit this form, plus the MSc thesis cover sheet to the BIOF program coordinator. Once they have submitted these forms to G+PS, the candidate will receive a link to upload the thesis electronically as a single PDF file to Faculty of Graduate Studies through the UBC online information, cIRcle.

Our webpage offers a procedure for completing a thesis, see "Student Guidelines for completion of MSc thesis": https://www.bioinformatics.ubc.ca/documents/

8.4 Transfer from MSc to PhD

8.4.1 Transfer without having completed the MSc program

Transfer from the Master's to the doctoral program in Bioinformatics – without having completed all the requirements of the MSc degree program first – may be permitted after no less than 12 months and no more than 24 months of study in the Master's program with the following requirements fulfilled:

● **Coursework**: completion of 12 credits with marks of 80% or higher, of which normally at least 9 credits must be at the 500 level or above and at least 9 credits must be of First Class standing. Mandatory courses BIOF 501A and BIOF 520 must be completed.

● **Research ability and potential**: clear evidence of research progress and ability; this can include an approved thesis proposal, participation in ongoing research activities in the supervisor's group and demonstration of skill and ability, conference participation, etc.

In order to transfer into the PhD program, the students' committee must approve the transfer before the student informs the BIOF Coordinator, i.e., in order to transfer, a committee must have been formed, and at least one committee meeting must have occurred. Most often, the decision to transfer is made after the first committee meeting. Note: a transfer directly into the doctoral program would ideally happen immediately after completion of the first year; it is not permitted beyond the completion of the second year in a Master's program. Retroactive transfers are not possible. Once a student has transferred from the MSc to the PhD program, they must complete the comprehensive exam within 36 months from their entry into the start of their initial degree program.

(See "Student guidelines for transferring from MSc to PhD program" https://www.bioinformatics.ubc.ca/documents/.)

In exceptional cases, a student may transfer between closely-related programs (e.g. from a MSc in Bioinformatics to a MSc in Genome Science & Technology degree) with an academic justification. Such a transfer can be very complicated, and we advise careful perusal of the information provided on the G+PS webpage

(https://www.grad.ubc.ca/faculty-staff/policies-procedures/transfer-degree-or-program).   Please note that all transfers (within and across programs) require the approval of the Dean of the G+PS, meaning that any transfer requests are forwarded by us to the G+PS for approval.

Because the approval is ultimately done by the G+PS, deadlines to submit transfer requests are strict. Signed and completed transfer to PhD form must be submitted to the BIOF Coordinator by:

- December 1 for a transfer start of January 1 the following year (winter term 2 session)
- April 1 for a transfer start date of May 1 (summer session)
- August 1 for a transfer start date of September 1 (fall session)

If a student started their Master's degree on September 1 of a given year, the latest a transfer request must be received is August 1 of their year 2 (23 months after start).

Students transferring from a Master's to a PhD degree without completing the Master's will be eligible for the PhD Minimum Funding Package effective the date of transfer to the PhD program. (https://www.grad.ubc.ca/awards/minimum-funding-policy-phd-students).

8.4.2 Transfer after having completed the MSc program

Students may choose to complete their MSc degree first before transferring to the PhD program. In this case, a new application to the PhD Bioinformatics program is required, and the student must go through the regular admissions process.

9. The PhD in Bioinformatics Program

A PhD student in the Bioinformatics program will normally spend a minimum of four to five years of full-time study at UBC. The maximum time allowed for completing a doctoral degree at UBC is six years. Students typically enter the PhD program with an MSc degree from a recognized university, or directly from a BSc degree, if they have significant prior research experience.

9.1 PhD Degree Milestones

Similar to MSc students, during their first year, the PhD student will normally complete their course work (there are no required courses for Ph.D. students, but their supervisor or committee may suggest courses that give them appropriate background for their research), establish a supervisory committee, and begin research in their supervisor's laboratory. The student's supervisory committee gives ongoing advice and guidance, and may recommend course work, although this happens less commonly for PhD than for MSc students. In the second year, the student will hold at least one supervisory committee meeting.

G+PS recommends successful completion of the comprehensive exam, which includes approval of the thesis research proposal by the end of the third year (36 months after entering the program) at the latest. Students transferring from the MSc to the PhD program must usually complete the comprehensive exam within 12 months from their entry into the PhD program. An extension beyond these limits may be considered, provided sufficient rationale, yet is not guaranteed.

In the third and fourth years, the student will continue their research work and is expected to have one supervisory committee meeting every year to monitor and guide research progress.

Students typically begin preparation of their PhD thesis during their fourth or fifth year in the program, after having gained approval to begin writing from their supervisory committee.

Once the thesis has been approved by the supervisory committee and the external examiner, the student presents their thesis work during a doctoral defense, evaluated by their supervisor, two members of their committee, two university examiners, the external examiner, and the academic community.

Please note: students must be perpetually enrolled in BIOF 699 (PhD thesis course) throughout the entire duration of their PhD degree. Permission to advance to candidacy should be sought at committee meeting #2 or #3 at the latest, at which time a comprehensive examination committee must be formed and a pre-comprehensive meeting must be held.

(See "BIOF PhD Quick Facts" https://www.bioinformatics.ubc.ca/documents/.)

The G+PS offers the Graduate Game Plan (https://www.grad.ubc.ca/current-students/professional-development/graduate-game-plan), a tool that can help you plan your degree from admission to completion in detail. For a PhD student in our program, the key milestones, following a five-year timeline, are the following:

- **End of Year 1**: course work completed; supervisory committee established and has met once to approve the overall thesis plan

- **End of Year 2**: research program established; second committee meeting to discuss advancement to candidacy (earliest time)

- **End of Year 3**: comprehensive exam passed, advancement to candidacy

- **End of Year 4**: research program nearing completion, graduation timeline established

- **End of Year 5**: permission to write meeting, thesis writing underway or completed, graduation

9.2 PhD Degree Progress

9.2.1 Annual Committee Meetings

G+PS requires that graduate students meet with their full committee at least once a year. Students who have not had a supervisory committee meeting within the previous 12 months are not eligible for awards. All new PhD students are encouraged to form their committee within the first two terms of graduate studies, and have to meet with their committee within the first year of starting the program.

9.3 PhD Thesis Requirements and Oral Defense

9.3.1 Thesis Requirements

A doctoral dissertation is a substantial piece of scholarly work that contains a significant contribution of new knowledge to the field of study. It presents the results and an analysis of the student's original research, and should be significant enough to be publishable in the refereed literature. G+PS outlines specific requirements of a doctoral dissertation for both scope

(https://www.grad.ubc.ca/current-students/dissertation-thesis-preparation/scope-doctoral-dissertation) and structure (https://www.grad.ubc.ca/current-students/dissertation-thesis-preparation/structure-theses-dissertations).

Please also consult the G+PS pages for further information on thesis preparation and formatting (https://www.grad.ubc.ca/current-students/dissertation-thesis-preparation). These pages also contain a sample thesis: https://www.grad.ubc.ca/sites/default/files/doc/page/sample_thesis.pdf

9.3.2 Thesis Approval and PhD Examination

After approval by the supervisor, copies of the final draft of the PhD thesis must be distributed to the members of the supervisory committee for approval. A minimum of two supervisory committee members, in addition to the supervisor, must approve of the written PhD thesis before it can be submitted to G+PS (see here: https://www.grad.ubc.ca/current-students/final-doctoral-exam/submitting-dissertation-external-examination, and required form to be filled here: https://www.grad.ubc.ca/forms/graduate-program-approval-doctoral-dissertation-external-examination-form).

It is recommended that the timeline for reading the thesis and providing comments is agreed upon with the committee beforehand to avoid conflict. Often, the supervisory committee will have substantive comments that must be addressed before the thesis can be submitted to G+PS. A buffer should be built into the timeline to allow for several rounds of revision to the thesis. Please also pay close attention to the mandatory timelines and deadlines for thesis approval, completion, submission and defense:

https://www.grad.ubc.ca/current-students/final-doctoral-exam/doctoral-deadlines. Under normal circumstances, the final doctoral examination process takes four months. It is lengthy and somewhat complicated process that requires careful planning. G+PS offers several tools and checklists to help you prepare for this (see here: https://www.grad.ubc.ca/current-students/final-doctoral-exam/tools-planning-doctoral-exam).

The procedures for the doctoral examination are described in detail on the webpages of the G+PS. Briefly, the examination consists of two parts:

● **External Examination**: an arm's-length expert in the subject of the dissertation reviews the document and decides whether or not it is ready to proceed to the final oral defense. This decision is expressed as a recommendation to the Dean of Graduate and Postdoctoral Studies, and is typically supported with a detailed analysis of the document's strengths and weaknesses, guided by UBC's expectations as laid out in the instructions to the external examiner (https://www.grad.ubc.ca/sites/default/files/doc/page/docexams_xx_instructions.pdf). Reading these instructions can help you understand what to expect, and prepare your thesis for external examination.

● **Oral Defense**: an examining committee that combines UBC faculty members from the supervisory committee with arm's length colleagues (and also, possibly, the External Examiner) hears the candidate present a synopsis of the work and then questions the candidate. The committee's task is to determine whether the candidate's written work, oral presentation, and interactions meet the standards of excellence required for a doctoral degree.

The full evaluation protocol for the final oral defense can be found here: https://www.grad.ubc.ca/current-students/final-doctoral-exam/final-oral-defence

9.4 Transfer from PhD to MSc

Students may apply to transfer from the PhD to the Master's program. Transfers may be approved if they meet the following conditions:

- Ideally, the transfer is initiated early in the student's doctoral program. The deadline to transfer is at the end of the third year for PhD students. A transfer must be requested before an attempt at the comprehensive exam is made (i.e. a Fail on the comprehensive exam means the student cannot proceed to a transfer from Ph.D. to M.Sc.)

- The transfer should be justified on the grounds of its appropriateness for the student's personal or professional goals. These should be discussed by the student and their supervisor.

- A transfer requires the full agreement of both the student and graduate program.

- Students must complete all the requirements for the master's program in order to be awarded their degree.

Please note that transfers between programs involving a change of discipline must be treated as new admissions. Please also note that transfers from doctoral to Master's programs may have implications for student funding. To apply for a transfer, the following form must be filled out and submitted to the G+PS via BIOF for approval:

https://www.grad.ubc.ca/forms/transfer-doctoral-masters-program.

10. Supervisory Committee

10.1 Purpose and Responsibilities

According to G+PS, the purpose of a supervisory committee is "to be available for help at every stage of the student's program, from selection of coursework to formulation of the research proposal by establishing the methodology and discussing the results, to presentation and publication of the thesis or dissertation"

(https://www.grad.ubc.ca/faculty-staff/policies-procedures/supervision). Together with the student's supervisor, "it is the responsibility of the supervisory committee to provide constructive criticism and assessment of the student's ideas as the program develops, thereby broadening and deepening the range of expertise and experience of the graduate student". When it comes to completing a PhD thesis and submitting it for external evaluation and defense, the committee is also required to approve the final version of the thesis before the examination can take place.

10.2 Working with your Supervisor

Your supervisor is part of your supervisory committee. According to the G+PS, they are "the key person in your graduate degree program. The principal role of the supervisor is to help students achieve their scholastic potential. The supervisor will provide reasonable commitment, accessibility, professionalism, stimulation, guidance, respect and consistent encouragement to the student. Supervisors should be available to help their graduate students at every stage, from formulation of their research projects through establishing methodologies and discussing results, to presentation and possible publication of dissertations. Graduate supervisors must also ensure that their students' work meets the standards of the University and the academic discipline".

The G+PS outlines the responsibilities of a supervisor in detail (see here: https://www.grad.ubc.ca/faculty-staff/information-supervisors/supervisor-responsibilities).

10.3 Committee composition and member selection

With support from their supervisor, students choose their supervisory committee members and schedule their initial committee meeting during the first year of study. When you first enter the program, please discuss your potential committee members with your supervisor. In general, it is your responsibility to contact prospective faculty and request that they act as committee members, but it is a good idea to do so in close collaboration with your supervisor. Be aware that not all faculty are able to honour every request for committee membership. There are also some rules and restrictions around who can serve on a supervisory committee:

- **G+PS membership**: all supervisors, co-supervisors, and supervisory committee members must either be members of G+PS (at least half of the supervisory committee members, so the supervisor plus one member), or must be approved to serve in their role.

- **Departmental affiliation**: only one faculty member from the same home department as the supervisor can serve on the supervisory committee

10.3.1 Committee Size

In BIOF, PhD supervisory committees must have at least three members (excluding the supervisor). MSc supervisory committees must have at least three members (including the supervisor). Please note that this rule deviates from what the G+PS suggests. In our program, we chose to increase the size of the committee by one member for the following reasons:

- **Broader expertise**: the requirement of adding an additional committee member can help prevent colleagues with closely related interests from always forming the same supervisory committee; an extra member adds perspective and interdisciplinary expertise.

- **Shared workload**: G+PS requires that at least two committee members approve a final PhD thesis before it can be submitted for external evaluation and defense, and at least one (maximum two) committee members (in addition to the supervisor) attend the oral PhD defense. An additional committee member means that the workload can be shared: two faculty members can read the thesis for acceptance, and the third can attend the defense.

- **Scheduling flexibility**: similarly, with three faculty members on a PhD supervisory committee, the student has one more option when trying to find a time that suits everyone for the comprehensive exam, which only requires that two members of the supervisory committee (plus the external committee member) be present.

- **Collaboration across sites**: with the diversity of program locations (i.e., across UBC campus and Vancouver General Hospital), an additional committee member helps prevent departmental silos and loss of program integrity.

10.3.2 Adding non-G+PS Committee Members

To add committee members who are not G+PS members, special permission is required. For service on PhD supervisory committees, BIOF and G+PS must approve (see form here: https://www.grad.ubc.ca/forms/recommendation-non-gps-member-join-supervisory-committee; for service on MSc committees, BIOF approval suffices. To be eligible, the non-member should

normally be actively engaged in research, experienced with graduate education, and hold appropriate qualifications. Please note that it is in your best interest to select someone who has the appropriate experience, because this person will be guiding and evaluating your work.

Suitable nominees can be found among the following: clinical faculty, adjunct faculty, professors of teaching, senior instructors, visiting faculty, honorary faculty, UBCO faculty, affiliate professors, faculty members from other universities, and off-campus professionals who are academically qualified to advise graduate students. More details can be found on the G+PS webpage (https://www.grad.ubc.ca/faculty-staff/policies-procedures/supervision).

To seek approval of G+PS, you must submit the following information along with the correct form:

- **Nominee's current CV**: note that this is not required for UBCO faculty in the Research Professoriate Stream

- **Brief statement from nominee**: this can be an email assenting to serve on your committee and accepting committee membership responsibilities

- **Memo from your supervisor indicating the particular qualifications that make the nominee suitable for your committee**.

- **Details of the composition of your committee**: please list everyone on your committee with departmental affiliation and G+PS membership status (to the best of your knowledge)

This information is important for us to evaluate whether a faculty member, who is not a G+PS member, can serve on your committee, given the constraint that at least half of the committee must hold G+PS membership.

10.3.3 Adding non-UBC Committee Members

We recommend discussing with your supervisor whether selecting a committee member from another university might be appropriate and useful. There are advantages and disadvantages to this approach. Sometimes, faculty members from other universities (and countries) are less familiar with the PhD requirements at UBC in particular, and in North America in general. They might not know what a comprehensive exam is, and extensive briefing might be necessary to ensure that they are able to appropriately evaluate your work. Approving an external member also takes time and administrative effort.

A note for including UBC-O faculty as supervisors, co-supervisors or supervisory committee members: as per a decision by the UBC Senate in January 2018, members in good standing of the College of Graduate Studies from the UBC Okanagan campus may co-supervise UBC-V Master's and doctoral students and/or serve on Master's and doctoral student supervisory committees without requiring approval from G+PS. Approval for UBC-O Faculty in these roles is the responsibility of the Bioinformatics program. Note that sole supervision or co-supervision of UBC-V Master's and doctoral students by UBC-O Faculty does require G+PS approval, upon BIOF recommendation.

10.4 Committee Meetings

The supervisory committee, whether Master's or doctoral, must meet at least once a year to monitor and direct the student's progress. Generally, it is the student's responsibility to organize

the committee meetings. This includes finding a suitable time for all members of the committee and booking an appropriate meeting space. Many faculty have significant travel schedules, so committee meetings are best arranged well in advance (2-3 months). Doodle or similar scheduling tools are useful and often necessary to find a suitable time. It is a good idea to check with your supervisor first, and then use their availability to inform selected times for a Doodle poll.

The following are general guidelines for conducting a supervisory committee meeting. The committee is given considerable latitude to alter this format as they see fit.

- **Progress report**: the student provides the committee with a written review of their progress one week prior to the meeting. We recommend that this progress report includes notes on required coursework, project progress, and any publications or presentations. Even though this report is not mandatory, we highly recommend providing your committee with a progress update, as well as a current CV.

- **Meeting procedure**: at the committee meeting, the Supervisor calls the meeting to order, and the student is asked to present their recent progress (in a short 20-25 minute presentation), and then a general discussion of the project ensues

- **Reporting**: be sure to print out the Committee Report form (https://www.bioinformatics.ubc.ca/documents/; and bring it with you to the meeting. Fill out the form, get all signatures, and return the completed form to the BIOF Coordinator bioinformaticsprogram@bcgsc.ca.

10.5 Adding a Co-Supervisor

For various reasons, it might be advisable or beneficial to add a co-supervisor to the supervisory committee. Typically, this would happen at the suggestion of your supervisor, for example, if your thesis work falls into an area outside of your supervisor's primary expertise, or if your project is part of a collaboration between your supervisor and another faculty member. If you jointly decide to add a co-supervisor to your committee, the co-supervisor must fulfill all the same requirements as every other supervisory committee member, i.e., must be approved by BIOF and/or G+PS if they are not already G+PS members. A co-supervisor has the same roles and responsibilities as your supervisor

(see https://www.grad.ubc.ca/faculty-staff/information-supervisors/supervisor-responsibilities). Please inform the BIOF Coordinator bioinformaticsprogram@bcgsc.ca if you add a co-supervisor.

11. Bioinformatics Curriculum and Course Requirements

11.1 Bioinformatics Core Courses BIOF 501A and 520

To fulfill our mandate of providing a broad education in bioinformatics to students from all academic backgrounds, the program offers two core courses: Special Topics in Bioinformatics (BIOF 501A) and Problem Based Learning in Bioinformatics (BIOF 520) (https://www.bioinformatics.ubc.ca/courses/). Both courses are team-taught, meaning that each lecture is given by a different content expert in the field. Each course is worth three credits.

11.2 MSc Course Requirements

Master's students are required to complete a minimum of 18 credits of coursework. Typically, Master's students take BIOF 501A and 520, worth three credits each, plus four electives. Three credits of a Directed Studies course may be taken instead of one of the electives with the permission of the student's supervisor.

Elective coursework is initially set through consultation with the student's supervisor, but the supervisory committee may also have suggestions. The program aims for flexibility so that the individual needs of our students with different interests in bioinformatics can, as far as possible, be accommodated.

In general, Master's students at UBC must obtain a minimum of 60% in any course to be granted pass standing, but only six credits of pass standing can be counted towards a Master's program without penalty. For all other courses, a minimum of 68% must be obtained. If a student repeats a failed required course, a minimum mark of 74% is required. A student whose grade does not improve by repeating the course or taking an alternate course may be required to withdraw from the graduate program. For more information, visit

https://www.grad.ubc.ca/current-students/managing-your-program/satisfactory-progress-masters-students.

11.3 PhD Course Requirements

There are no required courses for a Ph.D. student who hold a M.Sc. degree. However, the supervisor or committee could have recommendations to broaden the background of the student in certain areas they are lacking knowledge in.

Similar to Master's students, a minimum mark of 68% must be obtained in all courses taken by a student enrolled in a doctoral program at UBC. When repeating a failed required course, a minimum mark of 74% must be obtained.

The program suggests that the student take the course as an AUDIT if it is not a strong suit of theirs and thus doesn't need to worry about a 68% pass grade.

Procedures around unsatisfactory progress are outlined in detail on the webpage of the G+PS: https://www.grad.ubc.ca/faculty-staff/policies-procedures/academic-progress-grading-practices. Please also note that PhD students must be perpetually enrolled in BIOF 699 (PhD thesis) until degree completion.

12. The Comprehensive Examination

12.1 Purpose of the Comprehensive Examination

In order to be admitted to candidacy and to continue in the doctoral program, each doctoral candidate must successfully pass a comprehensive examination (the "comps exam"). The purpose of this exam is to ensure that the candidate has comprehensive knowledge in their area of specialization and in related fields of bioinformatics and can communicate their grasp and understanding of their chosen field of study and research in English (see UBC Calendar: https://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,204,342,617).

As part of the examination, the committee will determine whether the student has developed strong analytical, problem-solving and critical thinking abilities, breadth and in-depth knowledge

in bioinformatics, the required academic background for the specific doctoral research to follow, the potential ability to conduct independent and original research, and the ability to communicate knowledge of the discipline.

12.2 Examination Format

In BIOF, the comprehensive examination includes two examination formats: a written and an oral examination.

12.2.1 Written Examination

The written examination requires that the candidate prepares a written thesis research proposal limited to 25 pages double-spaced, not inclusive of figures and references. It is submitted to each member of their PHD supervisory committee. The candidate is expected to review the literature and discuss the general nature of unsolved problems in their research area, and to propose a series of questions, and experimental ways to answer them. Committee approval of the research plan will require a separate meeting, held at least one month prior to the exam. This committee meeting must be documented and a committee meeting report form signed by all members of the committee and by the student, agreeing the proposal is ready to be examined.

The purpose of the proposal is to test the candidate's grasp of the chosen field of study as a whole. The candidate should therefore prepare a written document that both incorporates an in-depth discussion of specific aims of their thesis research as well as contextualize that research, reflecting broad knowledge of the discipline. The research grant proposal is used as a vehicle for the comprehensive examination; it forms the basis of the oral examination but is evaluated independently, i.e., passing the oral examination does not necessarily indicate acceptance of the research grant proposal. The key criterion to be applied to the written examination is whether the candidate has a viable and well-considered research program, broadly contextualized within their field of research, and likely to lead to the generation of a high-quality Ph.D. thesis.

https://www.grad.ubc.ca/faculty-staff/policies-procedures/comprehensive-examination-candidacy

12.2.2 Oral Examination

The scope of the oral exam will be discussed and mutually agreed on by the candidate and the examining committee in a preliminary meeting, the pre-comprehensive exam meeting (see below). In the oral examination the candidate may be questioned on any aspect of the research grant proposal and will be asked to elaborate upon or defend issues arising from the literature review and the research plan outlined in the proposal. The range of questioning may include topics that are not discussed directly in the proposal but that are deemed relevant by individual members of the examining committee as discussed in the pre-comprehensive meeting. During the oral examination, the candidate demonstrates to the examining committee that they have a thorough understanding of those areas of bioinformatics relevant to their research proposal, can expand on and defend those ideas verbally in English, and have attained sufficient intellectual understanding of the subject matter to proceed with primary research likely to lead to a competent Ph.D. thesis.

12.3 Examining Committee

Typically, the comprehensive examining committee consists of all three members of the supervisory committee, (excluding the supervisor/co-supervisor), and exam Chair, to be identified by the student and their supervisor. If necessary, due to scheduling conflicts or unforeseen circumstances, only two supervisory members are required to be present, instead of all three members, to meet quorum. This is possible because G+PS requires that only two members of the supervisory committee must be present at the comprehensive examination.

Whereas supervisors (and co-supervisors) are not part of the examining committee for the comprehensive exam, they attend, with the strict understanding that their role is only to observe. They must not ask questions or speak on behalf of or defend the candidate in any way.

12.4 Timeline and Preparation for the Comprehensive Exam

12.4.1 Pre-Comprehensive Exam Meeting

The purpose of the pre-comprehensive exam meeting between the candidate and the examining committee (excluding the Chair) is to set up parameters for the comprehensive exam. The candidate will submit a title and one-page summary (subject to modification) of the research proposal at least one week before this initial meeting (see Timeline below). At the meeting, the Examining Committee and the candidate will discuss and mutually agree upon the guidelines, scope and level of understanding required to complete the written and oral components of the examination satisfactorily.

Among the issues to be clarified are the research topics associated with the proposal that each examining committee member feels the candidate should concentrate on as they prepare for their exam. The candidate will act as secretary at the meeting, and will provide each member of the committee with a written summary of the discussion no later than one week following the meeting; any discrepancies in interpretation should be resolved at this time. The date and time of the oral examination will also be determined at the time of the pre-comprehensive exam meeting and communicated to the committee and BIOF Program Coordinator. Each member of the examining committee will supply the candidate with a short reading list of research papers (typically five on average) for their suggested topic within two weeks of the pre-comprehensive exam meeting.

12.4.2 Due Date of Research Grant Proposal

The due date for the research proposal will be set at this meeting and will be no later than three months following the pre-comprehensive meeting. The approximate date of the oral component of the comprehensive examination will also be determined at the preliminary meeting, and in all cases will be within 14 days of the candidate submitting a copy of the completed grant application to each member of the examining committee. Because the available time window for the oral examination is very narrow, the candidate and the committee are encouraged to find an exact date and time for the oral exam at the time of the pre-comps meeting.

The supervisor may provide guidance and feedback to the candidate in the preparation of the research grant proposal. However, the research proposal should be written by the candidate. If the candidate fails to meet the deadline for submission of the research thesis proposal (by more than a grace period of 12 hours, which can be applied in exceptional situations such as documented, severe illness) the comprehensive examination will be automatically postponed for six months, and the process will start over with a new pre-comprehensive exam meeting, during
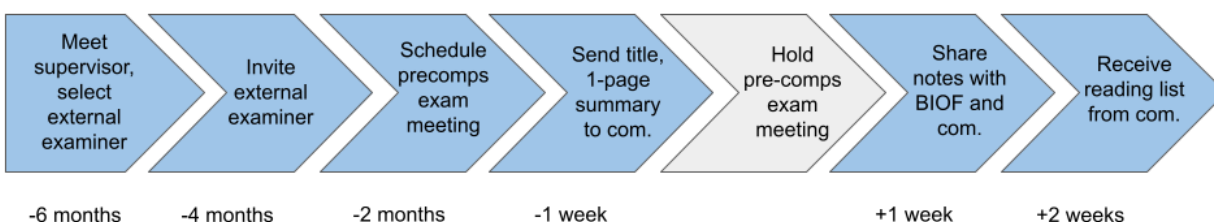
which new or additional topics of study and preparation have to be agreed upon. The candidate is encouraged to submit their research grant proposal with a margin of at least one day to avoid this situation. If this is beyond the 36 months allowed to advance to candidacy required by G+PS, an extension to candidacy is required.
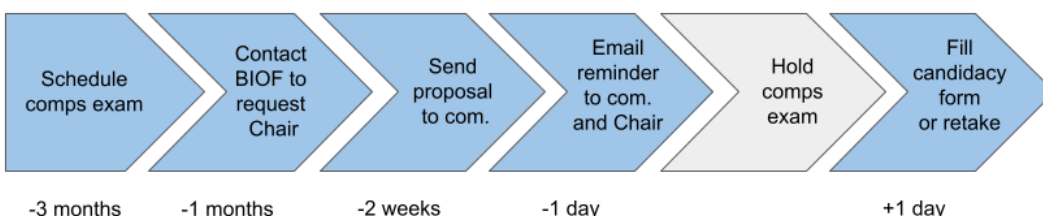
12.4.3 Timeline

Normally, the comprehensive exam takes place once all coursework has been completed, and by the start of the third year of enrolment in the PhD program. The G+PS mandates that the comprehensive exam has to be completed within 36 months of starting a graduate program.

The following timeline must be followed to prepare for the comprehensive examination. Please note that the time window for the oral examination ends within 3 months and 2 weeks of the pre-comprehensive exam meeting. The committee must be given two weeks to review the research grant proposal.

Timeline leading up to the pre-comprehensive exam meeting:

Meet supervisor, select external examiner	Invite external examiner	Schedule precomps exam meeting	Send title, 1-page summary to com.	Hold pre-comps exam meeting	Share notes with BIOF and com.	Receive reading list from com.
-6 months	-4 months	-2 months	-1 week		+1 week	+2 weeks

Timeline leading up to the comprehensive exam:

Schedule comps exam	Contact BIOF to request Chair	Send proposal to com.	Email reminder to com. and Chair	Hold comps exam	Fill candidacy form or retake
-3 months	-1 months	-2 weeks	-1 day		+1 day

12.4.4 Timeline Troubleshooting

Occasionally, a supervisory committee member may decide to leave the committee after the pre-comprehensive committee meeting, or opt out of the comprehensive exam. Typically, this happens if a major change in topic has occurred and if the supervisory committee member no longer feels that their expertise is relevant. Even though these situations are relatively rare, it is a good idea to attempt to avoid them or be prepared for them. It is vital to have regular (at least annual) supervisory committee meetings leading up to the pre-comprehensive committee meeting, and to ensure that all committee members are aware of any changes to the thesis topic or field of research.

Should a supervisory committee member decide to leave after the pre-comprehensive committee meeting, the candidate should immediately notify the BIOF program coordinator to determine next steps. Usually, the comprehensive examination can still go forward with the original timeline, because only two examiners (in addition to the Chair) are needed. The student

and supervisor can replace the supervisory committee member without requiring that this member also participates in the comprehensive examination (even though this would be desirable).

Should an additional examiner be needed for the comprehensive exam, the student and supervisor must have this committee member replaced as soon as possible and notify the BIOF program coordinator of the change. The student would then be asked to meet with the new committee member one-on-one to determine the scope of work for the written and oral examinations.

If an examiner is not able to participate in or misses the comprehensive examination, the exam can still go ahead as long as two examiners and the Chair are present. (The missing member can optionally submit their questions by email.) If fewer than two examiners are present, the examination may be rescheduled once. Contact the BIOF program coordinator immediately, if rescheduling is necessary.

In the unlikely event that the comprehensive exam has to be re-scheduled beyond three months of the pre-comprehensive exam meeting, the candidate may choose to confirm by email that the outcomes of the original pre-comprehensive meeting are up-to-date. The email is to outline (a) the student's thesis proposal goal and aims, (b) the topics suggested to them by their committee, and (c) a detailed reading list that was originally supplied to them by their committee. Confirmation is required by all members of the comprehensive exam committee that the topics / readings are still up to date, and that the student can move forward with writing their thesis proposal and studying for their comprehensive exam.

Please note that rescheduling is not recommended, and that the decision to allow rescheduling the comprehensive examination without a full pre-comprehensive meeting is at the discretion of the BIOF Program Director and can only occur once. Under exceptional circumstances that necessitate rescheduling, the candidate must immediately reach out to the program for guidance.

12.5 Oral Exam Procedure

A comprehensive exam is typically scheduled for two hours. The Chair calls the meeting to order and then assure that each member of the committee has had sufficient opportunity to read the proposal (two weeks), and reminds all members of the committee of the scope and purpose of the examination. The Chair then determines the order in which the examining committee questions the candidate, and specifies that the approximate length of time for each examiner is 15 minutes in the first round of questions, and no more than 10 minutes in the second round.

The exam then commences with a 20-minute presentation by the candidate, in which they are asked to provide an overview of their research grant proposal. Following are typically two rounds of questions, in which each committee member has the opportunity to ask questions related to (a) the candidate's project and progress based on their thesis proposal and the oral presentation, (b) the additional readings provided, and (c) the broader bioinformatics context of the proposed PhD project.

Committee members are encouraged to ask questions until they are able to fully assess the candidate's advancement to candidacy, within a reasonable time frame as provided above. After the final round of questions, the candidate is excused from the room and the committee deliberates the candidate's advancement to candidacy. The examination is pass/fail: each examiner (including the chair) is asked to rate the student's performance.

12.6 Comprehensive Examination Outcome

Following the examination, the candidate will be asked to withdraw from the room and the Chair will ask the supervisor to make a brief statement. The examining committee will then discuss the candidate's performance. After the discussion, the examining committee will vote to pass or fail the candidate by secret ballot. The decision will simply be the majority. In case of a tie, the Chair will be the deciding vote. The examining committee will make the following recommendations:

- the candidate continues on to the Ph.D. program (PASS)
- the candidate to be given a conditional pass (candidate shows deficiency in one specific area only-conditions apply (Conditional PASS)
- the candidate can be re-examined within 3 months time (FAIL- exceptional cases only)
- the candidate is asked to withdraw from the University (FAIL) - the student is given a written letter from the program Director, indicating they have been asked to leave the program due to Unsatisfactory Academic Progress

If all members of the committee rate the student's performance in the oral part of the examination as a "pass", the student is called back to the room and informed of the committee's decision. At this time, the student should also be given constructive feedback on specific areas of strength and weaknesses.

If a minority of members of the examining committee rate the student's performance as a "fail", the student should be informed that further examination on a subset of the topics covered is required. Because this situation is rare, the committee is given considerable latitude in designing such remedial work as it sees fit. If the majority of members (50% or more) rate the student's performance as a "fail", the student may be allowed 1) a re-take within three months or 2) they are informed that they must withdraw from the program. If the student fails the second sitting of the comprehensive examination, they must withdraw from the program. No student is permitted to sit this examination more than twice. If a student fails the comprehensive exam stated in situations 1) and 2), they will not be allowed to transfer to an MSc. That option is not available.

Similarly, the committee rates the thesis proposal as "pass" or "fail". If the research program is sufficiently well designed, the research proposal is accepted (pass). If it is not sufficient, then the examining committee may suggest re-evaluation of the thesis proposal by the supervisory committee (conditional pass or fail). The candidate is admitted to candidacy following obtaining a passing grade in the comprehensive examination and acceptance of the thesis proposal by either the examining or supervisory committees.

Following the comprehensive exam, the candidate either fills out an Advancement to Candidacy Form (in case of a pass)

https://www.grad.ubc.ca/forms/recommendation-advancement-candidacy and sends it to bioinformaticsprogram@bcgsc.ca, or, in case of a fail and is allowed a re-take, the student schedules a new exam.

12.6.1 Adjournment or Failure of the Comprehensive Examination

Candidates are allowed one examination adjournment or retake (if allowed by the examining committee), provided that they have the opportunity to complete the examination within the first 36 months of their program. An adjournment would typically happen if the candidate takes ill during the examination and is unable to continue, or if the candidate is unable to maintain focus

or concentration. If the candidate is allowed to resume the adjourned examination at a later date, they will be informed immediately by the Examining Committee as to the conditions for resuming the examination. These conditions include:

- **Time frame**: typically, an adjournment should occur within one week, or as soon as the candidate is well again; it has to occur within 3 months

- **Potential dates**: the committee will agree on a date that works for all committee members, and inform the student, provided that this date is within the agreed-upon time frame

- **Nature of the re-examination**: typically, the examination would resume where it was left off (e.g., continuation of questioning)

- **Committee**: the examination committee membership usually remains unchanged for the subsequent examination.

Similar steps are followed if the candidate fails their first attempt at sitting the comprehensive examination and has been allowed a re-take. If this occurs, the Examining Committee (or Graduate Program Director) must inform the student in writing of the outcome, and of the consequences of a potential second failure. The committee will then outline the conditions of the retake, including the time frame / date, nature of the retake, and committee membership. A retake must be scheduled within 3 months of the first comprehensive examination.

12.7 Role of the Chair

The Chair represents the Bioinformatics program on the examining committee, and serves the functions of monitoring and reporting. The Chair also represents the candidate and ensures that the examination process is fair. The comprehensive exam Chair is typically any faculty member within the program.

At the comprehensive exam, the Chair has the prerogative of asking questions. Throughout the examination, the Chair should ensure that questioning is fair and relevant, and that the candidate has adequate opportunity to demonstrate their knowledge of the field. During the deliberation process, the Chair votes along with the other committee members.

After the comprehensive exam, the Chair fills out the Chair Report/PHD Comprehensive Exam grade form and emails it to bioinformaticsprogram@bcgsc.ca. If the Chair report includes suggestions for improvements, especially if the thesis proposal is only rated as a "conditional pass", the candidate and their supervisor should be cc'ed on this email.

12.8 Comprehensive Examination Meeting Format

Meetings may be conducted in-person or over Zoom. Hybrid meetings may be allowed in exceptional cases, agreed on by all examining members and the Chair.

Best practices for students:

- When seeting up a Zoom meeting make the Chair an alternate or co-host and set up a break-out room for the deliberation component of the meeting

- Ensure the Chair has your phone number to troubleshoot issues if needed

- Remind all members about the meeting within a week of the exam date with location information

Students who hold an appointment (such as a RAship or TAship) are eligble for a licensed UBC Zoom account: https://it.ubc.ca/services/teaching-learning-tools/zoom-video-conferencing

12.9 Resources

https://www.grad.ubc.ca/faculty-staff/policies-procedures/comprehensive-examination-candidacy

"Student guidelines for PhD qualifying exam" https://www.bioinformatics.ubc.ca/documents/

12.10 How to Prepare for the Comprehensive Exam

Listed here are some best-practice ideas, shared by successful students in our program:

- Meet with your supervisory committee to confirm that you are ready for the comprehensive examination
- Do a dry-run of the comprehensive examination with your peer group and supervisor
- Select a friendly faculty member to act as a neutral observer; inform your examining committee that you will have an observer at the exam
- Work with your supervisor to select a Chair for the exam

13. Funding for Graduate Students

Graduate education challenges students and requires their full attention. As a central element of their education, graduate students also contribute significantly to research in their respective laboratories, as well as to the education of undergraduate students. Other work or financial commitments can be a major obstacle for graduate students, which is why scholarships and financial support are a key priority for UBC's G+PS. The minimum funding package recognizes the important contributions that graduate students make to the University, and provides needed resources for the students to cope with living in the most expensive city in Canada. Funding has a substantial impact: graduate students with insufficient funding have longer completion times, greater likelihood of attrition, and lower satisfaction regarding their graduate student experience.

13.1 Minimum Guaranteed Funding Guidelines

All full-time students, who are offered admission to the MSc or PhD Bioinformatics program, must be provided with a minimum funding package for each of the first two years of their Masters ($27,900 per year) or each of the first four years of their PhD ($27,900 per year). The funding package may consist of any combination of internal or external awards, teaching-related work, research assistantships, and graduate academic assistantships.

Whereas the minimum stipend is only guaranteed for two (MSc) or four years (PhD), financial support beyond this period is possible and depends on the ability of the supervisor to support the student and/or on existing scholarships and awards. Students will discuss this topic with their supervisor upon entry into the program, and following completion of their first year of studies.

We recommend that any agreement of financial support beyond two / four years should be confirmed in writing and signed by both the supervisor and the student before the start of the 3rd / 5th (and subsequent) years. The document should indicate the annual stipend and the term for which the stipend will be provided.

As per G+PS guidelines: The Minimum Funding Package is inclusive of vacation pay and benefits, if applicable. It does not include the International Tuition Award. Students must apply

for scholarships as required by their graduate program to continue to qualify for the Minimum Funding Package. Students may be required to disclose their sources of university or scholarship funding, as well as other income sources to their graduate program and must inform their program immediately of new funding sources (see here for details:

https://www.grad.ubc.ca/awards/minimum-funding-policy-phd-students).

13.2 Sources of Funding

13.2.1 Research Assistantships

A research assistantship (RAship) is usually paid from one of the supervisor's grants. Generally, the understanding is that the student's thesis work is part of the supervisor's research program, hence, salary payment through a grant is an eligible expense for the supervisor. Congruently, the expectation is usually that the planned thesis work is sufficient to fulfill the requirements of an RAship. Sometimes, a supervisor might ask a student to conduct additional studies that are not part of the student's thesis, but are part of the supervisor's research program. It is important to discuss what the expectation is for work performed outside of the student's thesis work, if any, at the start of the relationship. We generally recommend that graduate students may be hired for additional wages for work unrelated to their degree, but that these wages should not be counted towards their minimum level of support.

However, it is important to note that all students and other members of each lab, whether paid as an RA or not, are expected to contribute to the shared chores of a lab and to fulfil weekly requirements of the supervisor. This includes weekly meetings, seminars, one-on-one meetings, requirements to document work, share code, and engage in peer-supervision activities. Again, we highly recommend that the extent of these chores are outlined clearly in a student-supervisor expectation document.

13.2.2 Teaching Assistantships

Teaching assistantships (TAships) are available for full time (typically 192 hours per term) or part time (96 hours per term). The maximum time allowed for TA work is determined through the CUPE (the union representing TAs at UBC) collective agreement (https://cupe2278.ca/). The current rules are that the total time commitment for an academic term cannot exceed 192 hours. The average number of hours per week is 12 and the maximum hours per week is 24. One-day duties cannot exceed eight hours without the TAs consent. In general, if you choose to pursue a teaching assistantship, be sure to find out the following:

- How your TA duties will fit in with your graduate program work (coursework and research).

- Your supervisor's expectations around time spent outside of the lab, and whether your TA salary will be part of your graduate student stipend (typical), or considered an add-on.

- The expectations of the instructor you are working for, and whether you will be expected to lecture, lead tutorials or discussion groups, hold office hours, invigilate exams, mark papers, or supervise students.

- Whether there are any conflicts with schedules (work or times you will be away) for which you need to make alternative arrangements.

Whereas many graduate programs are affiliated with a department and can therefore make a certain number of TA positions available, students in Bioinformatics only have limited access to

TAships. Some of the TA opportunities are listed below. Applications usually open in the late spring or early summer for the following academic year.

- **BIOF 501A and 520**: every year these two core courses each require one full-time TA. The prerequisite for TAing these courses is that the applicant has already passed these courses successfully (with first-class standing). Therefore, this opportunity is only available for students in Year 2 and higher. The application deadline will be posted each year when this opportunity is available, however the person who TAed the course for the previous year has the first option to re-TA the course again and so the opportunity will not be posted for that year.

- **STAT 540**: every year one full-time TA is required. The prerequisite for TAing these courses is that the applicant has already passed these courses successfully (with first-class standing). Therefore, this opportunity is only available for students in Year 2 and higher. The application deadline will be posted each year when this opportunity is available, however the person who TAed the course for the previous year has the first option to re-TA the course again and so the opportunity will not be posted for that year.

- **Biology**: the biology program typically has a fairly large number of TA positions available; see here: https://www.biology.ubc.ca/ (click on the tab "Teaching Assistants" for updated information, or email TAship-application@biology.ubc.ca). Be sure to apply to TA a course that falls within or close to your area of expertise.

- **Data Science, Statistics, and Computer Science** are other programs at UBC that might offer TA positions of interest to you.

Teaching assistantship rates are set by collective bargaining between the University and the Teaching Assistants' Union, a local of the Canadian Union of Public Employees. TA appointments are coordinated and administered at the departmental level. For more information on TA and RA positions see the UBC policy on student service appointments (https://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,204,343,624). Please also note that the Centre for Teaching, Learning and Technology (CTLT) offers free workshops for graduate students (https://ctlt.ubc.ca/programs/all-our-programs/instructional-skills-workshops/). Participation in these workshops is highly recommended for anyone interested in building a teaching portfolio.

UBC offers a Prize that includes a certificate and $1,000 for TAs with outstanding performance (https://academic.ubc.ca/awards-funding/award-opportunities/teaching-awards).

13.2.3 Awards and Fellowships

All graduate students are required to apply for all financial awards for which they are eligible. There are awards and fellowships at the national, provincial, university, faculty and program level; the most important awards are listed below and a full list can be found here: https://www.grad.ubc.ca/scholarships-awards-funding/award-opportunities. As a general guideline, program-internal deadlines for submitting application materials are always a minimum of two weeks ahead of the official deadline to allow time for internal adjudication and ranking.

National awards

- Canada Graduate Scholarships (CGS) for Canadians and permanent residents at the Masters (CGS-M) and doctoral level (CGS-D); adjudicated at the program, university and federal level in the fall/winter of each year

- Vanier Scholarship: $50,000 per year for up to three years to top doctoral students; adjudicated at the program, university and then federal level, highly competitive

University-level awards

- Killam Doctoral Scholarships: most prestigious doctoral award at UBC; 25 stipends of $30,000 per year for two years plus travel allowance; these awards are part of the Affiliated Fellowships competition (see next item)
- Affiliated Fellowships, offered by G+PS, are open to students regardless of citizenship or visa status; these fellowships are typically adjudicated at the same time as the CGS-M/D competitions and range from small awards to the large Killam awards
- Four-Year Doctoral Fellowships (4YF at $18,200 per year for four years, plus a full tuition waiver). Allocations of awards are made by G+PS via the Faculty of Science to each program; whereas these awards are university-level awards, they are adjudicated at the program level. During the admissions procedure, suitable candidates are identified by our admissions committee, and fellowships are offered to top students upon acceptance of admission.
- BC Graduate Scholarship (limited to Canadian citizens or permanent residents, $15,000 for one year): same adjudication process as for 4YF; these scholarships are given to highly-ranked incoming students.
- Indigenous Graduate Fellowship: fellowship for doctoral ($18,200 per year) or Masters ($16,175) students who self-identify as Indigenous. These awards are adjudicated at the university level (G+PS); the program provides a list of ranked candidates to G+PS.
- BPOC Excellence Awards: these small $1,500 entrance awards are allocated to programs and adjudicated at the program level for students who self-identify as Black or a person of colour.
- Dissertation awards: G+PS adjudicates a number of dissertation awards, most notably, the Governor General's Gold Medal Award, see here:
- https://www.grad.ubc.ca/scholarships-awards-funding/award-opportunities

Incoming Ph.D. students are also eligible for the Graduate Support Initiative (GSI), a program for funding graduate students through entrance scholarships, multi-year funding packages, tuition awards and scholarship top-ups. Approximately $6.5 million in GSI funding is awarded each year across all UBC graduate programs. Our program traditionally chooses to distribute the allocated amount equally amongst all incoming and current Ph.D (year 1-4 only) graduate students. Because the allocated amount and the number of incoming students differ each year, we cannot commit to a fixed amount. In past years, GSI funding has usually been between $3,000-$4,000 per incoming student. This amount will be added to your ASC account, is listed as 'Faculty of Science Graduate Award' and is paid towards tuition. Please feel free to list this one-time award as a "Faculty of Science Entrance Scholarship" on your CV.

A list of award opportunities can be found here:

https://www.grad.ubc.ca/scholarships-awards-funding/award-opportunities. Students will also receive email announcements of award competitions throughout the year from the BIOF coordinator as they are announced by G+PS.

13.2.4 Travel Awards

BIOF will give travel awards of up to $1000 each to be used to cover expenses incurred when attending a conference in the current calendar year. Applications are possible at any time. Each student in BIOF is eligible for one award per degree, for a maximum of one award for Masters students, and one award for PhD students. To be eligible, students must present a talk or a poster at the conference. Instructions on how to apply for travel awards are provided on our webpage (under "Funding"): https://www.bioinformatics.ubc.ca/funding/

All graduate students are also eligible for the Graduate Student Travel Fund, once per degree program from G+PS. The Fund provides one-time travel/research dissemination support to a maximum of $500 per graduate student who presents a talk or poster at a conference or symposium. Details can be found here:
http://grad.ubc.ca/awards/graduate-student-travel-research-dissemination-fund

Please note that many research centers also provide additional travel funds for graduate students, usually once per degree program. If your supervisor is affiliated with a UBC or Vancouver Coastal Health research centre, ask if you might be eligible for a travel award.

13.3 Award Adjudication Bioinformatics

BIOF adjudicates many of the awards listed in the previous section. For some awards, such as the 4YF, BPOC, GSI, we are responsible for the entire adjudication process. For other awards, such as G+PS or federal awards, we are responsible for a program-level adjudication to determine our top students, whose application will then go on to the next stage (either within the university, the province, or Canada-wide).

As a program, we are committed to transparency in our decision-making and adjudication processes. To ensure this, we have put the following measures in place, and we encourage all applicants for awards or fellowships to familiarize themselves with our decision structures and procedures.

● Our awards committee consists of a mix of program faculty. Internal quality control is provided by asking each member of the committee to evaluate each application, if the number of applications allows this. At a minimum, each application is always adjudicated by at least two committee members.

Resources for writing a successful award application are available on the website of the G+PS (https://www.grad.ubc.ca/scholarships-awards-funding). The G+PS also offers award writing workshops, which we advertise through our mailing list.

13.4 Tuition Fees

Tuition fees for graduate students are paid in three installments annually. If you do not pay these fees on time, your records will be placed on "financial hold", all registration activities will be blocked, and you will be charged a penalty fee. Students often find it challenging to make their initial tuition payment while waiting to be paid for a TA or RA appointment. Students with these appointments are paid via salary every two weeks, and the first cheque arrives after tuition is due. The situation is outside of the graduate program's control.

One solution is to apply for a tuition deferral through UBC Enrolment Services. If you cannot provide the proof of compensation that the application asks for, please contact the Finance administrator in your home department.

Note that there are student fees in addition to tuition fees. These include AMS and GSS fees, Medical and Dental Extended Health Plans, Sports and Athletics, U-Pass/Compass Card, etc. Information can be found at:

http://grad.ubc.ca/prospective-students/tuition-fees-cost-living/graduate-student-fees.

Tuition and fees for the year are subject to adjustment and UBC reserves the right to change them at any time without notice. Tuition fees are outside of the control of graduate programs. The most up-to-date tuition fees for both Canadian and international students can be found on the UBC Vancouver Academic Calendar (https://www.calendar.ubc.ca/vancouver/).

An International Tuition Award of up to $3,200 is given to all international students (both MSc and PhD) who do not have an external scholarship that contributes to tuition payment. Further information can be found at http://grad.ubc.ca/awards/international-tuition-award. You do not need to apply for this award, but you must be registered for courses (such as BIOF 599 or 699) in order for the system to permit the award to be assigned to your ASC account.

13.5 Resources for Dealing with Financial Hardship

Even though minimal funding guidelines are in place to prevent hardship, financial crises can occur. Unfortunately, as a graduate program, we do not have the budget to support students in need. We always suggest that you talk to your supervisor first if you find yourself in a situation where you do not have enough funds to pay tuition, rent, or food. If you believe that you are not receiving the current minimum stipend, please contact the BIOF coordinator so we can contact your supervisor on your behalf and help remedy the situation.

We can also suggest additional sources of income and point you to opportunities for TAships and awards and scholarships. It is always good for us to know when you are struggling, including financially, so we can try to assist you. The G+PS offers a cost-of-living calculator that might be used as an additional resource, especially when discussing your stipend with your supervisor:
https://www.grad.ubc.ca/prospective-students/tuition-fees-cost-living/cost-living#calctable

Here are some other potential sources of emergency funding for graduate students at UBC:

- Emergency funds from the Graduate Student Society: https://gss.ubc.ca/student-funds/
- UBC offers emergency funding and financial advice in times of crisis:
  https://students.ubc.ca/enrolment/finances/funding-studies/financial-emergencies

14. Academic Advising in the Bioinformatics program

14.1 Conflict Resolution

All graduate students and faculty members in BIOF have a responsibility to maintain professional and respectful relationships with other students, staff, members of the BIOF program, the university community and the general public.

Therefore, we encourage all our members to first deal directly with individuals to resolve disagreements, dissatisfactions, issues and conflicts, whenever possible. If for whatever reason the situation cannot be resolved directly, graduate students and faculty may consult the appropriate resources (see *Section 2.2* above) or follow the chain of authority outlined below.

14.1.1 Chain of Authority for Conflict Resolution
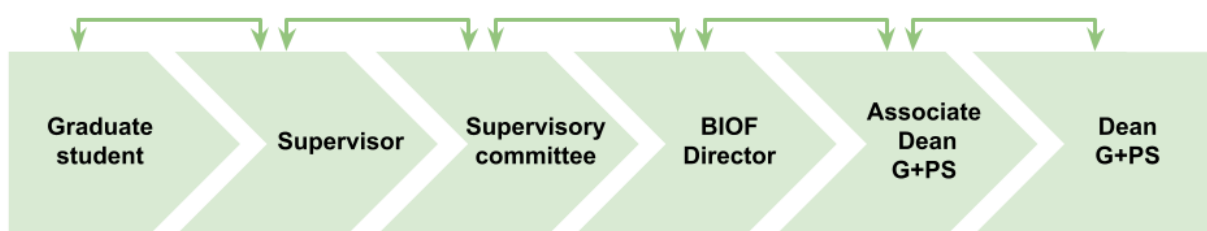
In this chain of authority, the graduate student initiates the conversation. An example could be the following: a PhD student in their second year believes they are not currently receiving the funding they anticipated under the Minimum Funding Policy. As a first step, the student should reach out to their supervisor. If the issue is not resolved, they should then speak with the BIOF Director. In this particular example, involving the supervisory committee might not be helpful and this step can be skipped. The Graduate Program Director will discuss the issue with the student and the supervisor. If no solution is found, the BIOF Director, together with the student and supervisor, can consult with the Associate Dean of Funding in the Faculty of G+PS, and ultimately with the Dean of G+PS.

Whereas most conflicts can be resolved within our own program, we do have access to expert help at the G+PS and reach out to case managers and Associate Deans frequently. We are here to help! If you have a conflict that you cannot resolve with the help of your supervisor or committee, please contact us.

14.1.2 Conflict Prevention

Several measures are in place in our program and in the Faculty of G+PS, designed to help prevent conflict in the first place. The most important tool is the student-supervisor agreement, which we ask you to fill out with your supervisor during one of your first meetings when you join the program

https://www.grad.ubc.ca/faculty-staff/information-supervisors/supervising-graduate-students.

Other important tools:

- **Handbook of Graduate Supervision** by G+PS: This handbook clarifies the roles of student and supervisor, and provides in-depth advice on issues that can potentially lead to conflict, such as time management, learning styles, and communication

    (https://www.grad.ubc.ca/faculty-staff/information-supervisors/principles-graduate-supervision).

- **Annual committee meetings and annual progress report**: as outlined in *Section 7.2* (for Master's) and *Section 8.2* (for PhD), annual committee meetings and annual progress reports are mandatory for Master's and PhD students, and are probably the most important tools to promote healthy communication with your supervisor and committee, to facilitate progress, and to prevent conflict.

14.2 Leave of Absence

Leaves of absence can be granted for personal, health, professional, or other reasons when a student is best advised to have time completely away from their academic responsibilities (see

https://grad.ubc.ca/current-students/managing-your-program/leave-absence). The leave period is not counted as part of the time period for completion of the degree. Leaves are normally for one year or less. A leave will begin on the first day of a term, for a period of four, eight or 12 months. International graduate students should consult International Student Advising before pursuing a leave of absence to understand the impact on their ability to stay in Canada, their study permit, and later post-graduation plans.

Your supervisor cannot prevent you taking leave, but may be able to provide additional support. Whether and what form the additional support takes should be discussed between you and your supervisor. Therefore, you should always talk to your supervisor and supervisory committee first before requesting a leave.

A request for a leave of absence (https://www.grad.ubc.ca/forms/request-leave-absence) must then be submitted to the BIOF program coordinator in writing and must be approved by G+PS. Leave policies are set by UBC (https://www.grad.ubc.ca/faculty-staff/policies-procedures/leave-status).

While on a leave of absence, graduate students are expected to not undertake any academic or research work related to the program for which they have taken a leave of absence. Access to the UBC's facilities and resources, including faculty supervision, while on a leave of absence may be limited.

14.2.1 Parental Leave and Accommodation

A graduate student who is bearing a child or who has primary responsibility for the care of an infant or young child immediately following a birth or adoption of a child is eligible for parental leave. A request for a four, eight, or 12-month parental leave should be made both through the student's primary department (where the student is appointed) and through G+PS: https://www.grad.ubc.ca/forms/request-parental-accommodation The leave period is not counted in the time period for completion of your graduate degree.

Graduate students with substantial parenting responsibilities for a newborn or newly adopted child under the age of six during their course of study may apply for an eight-week parental accommodation period through G+PS (https://www.grad.ubc.ca/faculty-staff/policies-procedures/student-status). The application form can be found here: https://www.grad.ubc.ca/forms/request-parental-accommodation.

Please discuss funding during your leave with your supervisor. As per the UBC calendar: "A graduate student granted a parental accommodation period retains the full value of any fellowship or other award for which the terms and conditions are established by the Faculty of Graduate and Postdoctoral Studies and will experience no change in this funding during the parental accommodation period. Payments will continue on the usual schedule. There will be no change to the total amount granted or to the completion date of the scholarship".

14.3 Vacation Policy

Graduate students at UBC are entitled to three weeks (15 working days) of vacation per calendar year (September 1 – August 31). Details are outlined in the UBC calendar: https://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,204,342,1453

Please note that vacation policies are among those topics that should be discussed with your supervisor. Often, vacation regulations are handled more flexibly within reason, as long as the student's progress is satisfactory.

14.4 Program Extension

There are time limits for completing graduate degrees: five years for a Master's degree, and six years for a doctoral degree. Requests for extensions must be fully justified and supported. But there are many valid reasons for a program extension. In general, a program extension will be granted if it is justified by extenuating circumstances not of the student's making (e.g., delays due to the COVID-19 pandemic, or problems accessing necessary equipment or infrastructure). If you find yourself in a situation where you feel that an extension might be needed and justified, please contact the BIOF Coordinator so we can assist you.

In general, G+PS rules around extensions are as follows: A request for a one year's extension will be received favorably if it is fully justified and supported by the student's supervisor and the graduate program. A second year's extension requires a compelling rationale from the graduate program and an explanation of the special circumstances that would justify an exception. In order for the BIOF program to approve your extension request, you must also show that you have had a committee meeting within the past 12 months.

In addition, the following rules apply:

- Extensions will not be granted beyond two years.
- Extensions must correspond with the beginning and end of term.
- Increased tuition fees are assessed for students on extension.

To apply for an extension, you must fill out an extension request form (https://www.grad.ubc.ca/forms/request-extension-time-allowed-degree-completion) along with a detailed month-by-month timeline that outlines how the additional time will be used to complete the program.

14.5 Program Withdrawal

Students may wish to discontinue their programs for personal reasons, or may be required by UBC to withdraw from their programs. The procedure for withdrawing depends on the reason for the withdrawal. Withdrawal may be processed for one of the following reasons:

- Voluntary withdrawals
- Required to withdraw for academic reasons
- Required to withdraw for non-academic reasons
- Withdrawal for non-registration

If a withdrawal is necessary, you will be fully supported by the BIOF program and G+PS, therefore, we do not provide all available information here. For more details on the different reasons for withdrawal, please consult

https://www.grad.ubc.ca/current-students/managing-your-program/withdrawing-program.

14.6 Readmission and Reinstatement

Similar to Withdrawal, the reasons and rules around readmission and reinstatement are manifold and can be found here:
https://www.grad.ubc.ca/current-students/managing-your-program/readmission-reinstatement.

15. Career Development

Traditionally, the Graduate Program in Bioinformatics is aimed at educating the next generation of scientists. However, we acknowledge that our students will have different career goals, including careers in health and medicine, education, communication, industry or politics, and the declared goal of the Bioinformatics program is to prepare you for a successful career inside or outside of academia.

There are many different facets to becoming a successful researcher or professional. One must develop a wide range of intellectual and interpersonal skills as well as a strong knowledge base. Some aspects of the training are not found in textbooks, journals, and courses, or in the work documented in a thesis. A researcher must learn to develop new ideas and new approaches to succeed. They must be able to respectfully engage with other researchers, research participants, or patients, and communicate their findings. They must also learn how to be an effective and supportive team member, mentor and, at the PhD level, take ownership of their research efforts.

As a further resource for students to develop skills for navigating beyond academia and career counselling, G+PS offers many different workshops and courses on their webpage: https://www.grad.ubc.ca/current-students/professional-development/resources.

The Canadian Institute of Health Research (CIHR) has also developed an online IDP and resources (https://cihr-irsc.gc.ca/e/50516.html).

15.1 Graduate Pathways to Success

Complementing individual learning and development plans, the Faculty of Graduate Studies at UBC has also developed an award-winning portfolio of workshops and other resources to enhance students' academic experience and prepare them for their careers (https://www.grad.ubc.ca/current-students/professional-development/graduate-pathways-success).

15.2 Public Scholars Initiative

Finally, and among many other initiatives, we would like to highlight a unique opportunity at UBC, the Public Scholars Initiative (PSI). This is an innovative program supporting doctoral pathways that encourage purposeful social contribution, mutually beneficial forms of collaborative research with partners from diverse economic sectors, and broader career readiness for students (https://www.grad.ubc.ca/psi).

Overview of Appendices

Appendix 1: Bioinformatics Program Management and Structure

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                    │  Steven Jones   │
                    │    Director     │          ┌──────────────────────┐
                    └────────┬────────┘◄─────────┤   Paul Pavlidis       │
                             │                   │  Associate Director   │
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      │ Committee  │  │ Committee  │  │  Planning    │
      │            │  │            │  │  Committee   │
      └────────────┘  └─────┬──────┘  └──────────────┘
                            ▼
                  ┌──────────────────────┐
                  │ Sharon Ruschkowski    │
                  │ Program Coordinator   │
                  └──────────────────────┘
```
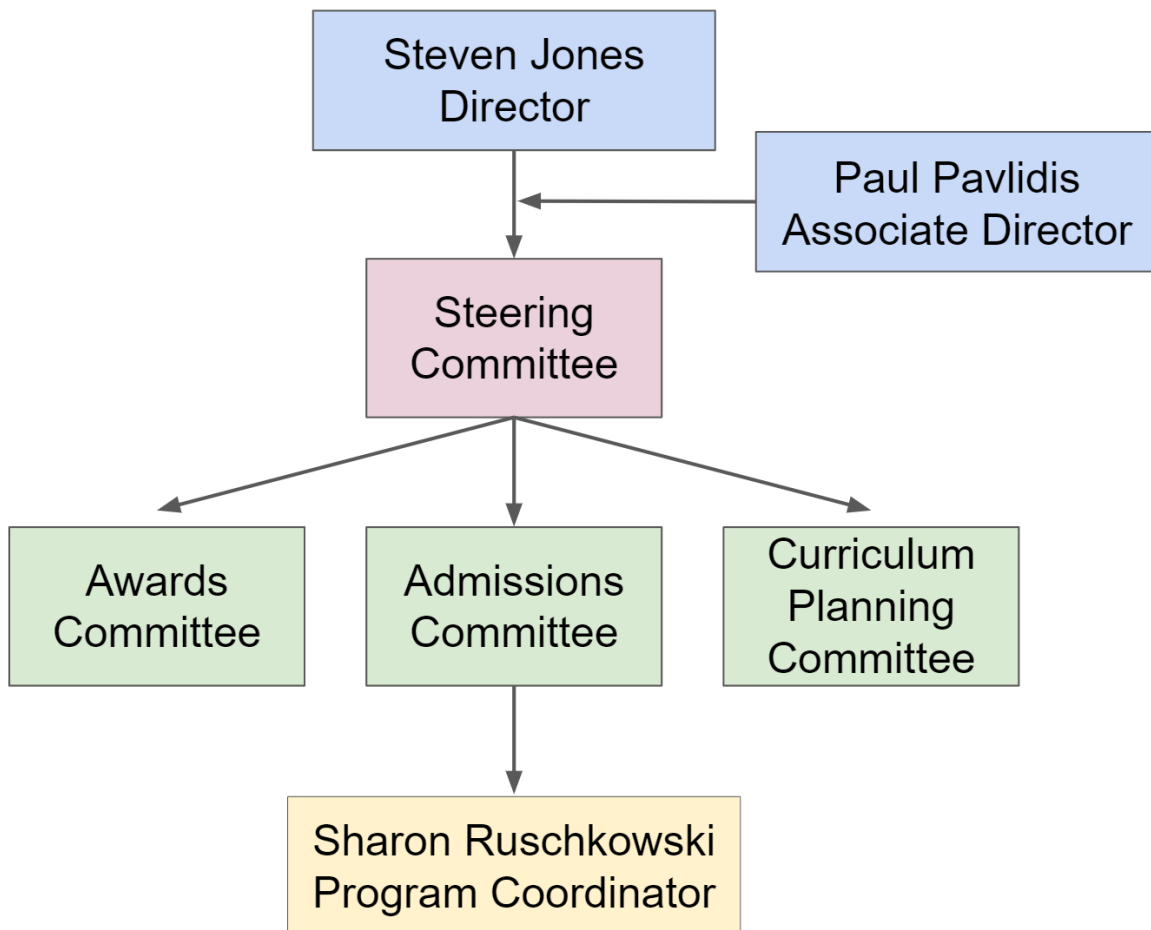
Appendix 2: Graduate Supervisor/Student Agreement and Committee report Form

GRADUATE STUDENT AND SUPERVISOR AGREEMENT

Date: _____

The following are terms of the graduate student and supervisor relationship. These terms apply to the time during which _____ is a graduate student in the _____ Graduate Program working under the supervision of _____.

1) Supervisory Meetings. Student and supervisor will meet each week on at least two occasions, once at a weekly lab meeting, and once for an individual meeting. The individual meeting will be scheduled for a time convenient to both student and supervisor and time should be allowed for 1 hour of discussion. Email will also be a means for communication and questions.

2) Student Funding. The student will be required to apply for as many scholarships and/or bursaries as she is eligible. In the event that the student's funding should run out, base level funding will be provided from

_____.

3) Research/Publication conditions. Student will be provided with access to adequate computing and material resources to conduct his/her research. Original data records must remain with the lab, but copies may be kept by student upon completion of program to assist in writing papers. Student is expected to comply with all University standards and policies of scholarly integrity. Failure to do so may result in being required to withdraw from the graduate program and other punitive actions by the University.

4) Authorship Policies. It is the policy of this department to assign authorship based on level of intellectual contribution to the research, as determined collectively by the research team. The research supervisor is usually listed as the last author. If there are disputes about authorship within the research team, the department Head will determine the order of authorship. Student will be encouraged to publish the result of their research according to the standards in their field.

5) Work hours. Hours of work and holidays are at the discretion of the student, but will normally meet or exceed _____ hours per week. A sufficient quantity of work will be carried out to complete projects, meet deadlines and achieve in classes.

I have read and agree to the above terms.

Student's signature _____ Date _____

Supervisor's signature _____ Date _____

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THE UNIVERSITY OF BRITISH COLUMBIA

Graduate Program in
BIOINFORMATICS

100-570 West 7th Avenue
Vancouver, B.C. Canada V5Z 4S6
Tel: (604) 707-5803
Fax: (604) 876-3561
http://bioinformatics.ubc.ca

Thesis Committee Meeting Report

Student: Date of entry into Program:

Supervisor: Department:

Committee Meeting Date:

Progress to date Acceptable: ☐   **Progress to date Unacceptable:** ☐

Thesis Committee (print name, followed by signature of those present)

1._____   _____

2._____   _____

3._____   _____

4._____   _____

Summary of Thesis Committee comments (additional pages may be added):

_____

_____

_____

_____

_____

_____

Please return completed form to: (scan, fax, or mail)

Bioinformatics Graduate Program Coordinator
sharonr@bcgsc.ca
100-570 West 7th Avenue
Vancouver, BC V5T 4S6
Tel: (604) 707-5803
Fax: (604) 876-3561