

Available TA'ships through the Department of Biochemistry and Molecular Biology

BIOC 202	- Mike Krisinger
BIOC 203	- Robert Maurus, Warren Williams
BIOC 301	- Jason Read
BIOC 302	- Robert Maurus, Alice Mui
BIOC 402	- Calvin Yip, Joerg Gsponer
BIOC 410	- Eric Jan, LeAnn Howe, Ivan Sadowski
BIOC 421	- Scott Covey
VSP	- Scott Covey

PhD students attending a Graduate program in the Department of Biochemistry and Molecular Biology must complete a quarter time (1/4 or 96 hours) Teaching Assistantship to complete degree requirement. TA'ship preference is given to students in the Department of Biochemistry and Molecular Biology.

BIOC 202 - Introductory Medical Biochemistry

Course instructor - Michael Krisinger

Number of hours/week: see below

Number of available positions: 2 1/8 TA positions for two consecutive years (May June summer term)

Class size: 90-160

Course Description: Introduction to proteins and enzymes, carbohydrate metabolism, and glucose homeostasis. The course emphasis is on human biochemistry and it is designed for students going into health science fields.

First half of course: Review of basic chemistry, Amino acid and protein structure, enzyme thermodynamics, enzyme kinetics and inhibition, Chymotrypsin, Hemoglobin, Carbohydrates

Second half of course: Intro to metabolism, glycolysis, Krebs cycle, oxidative phosphorylation, Glycogen metabolism, Gluconeogenesis, Ketone bodies, Integration of metabolism, Diabetes

Duties: This course ideally runs with 2 TAs working back to back (consecutively) as the course has a natural 50:50 split in content and also 2 examinations.

Time Breakdown: The primary duty of the course TAs is to run two (2) 1-hour tutorials weekly for half the duration of the 6-week course for a total of 6 tutorials.

A further breakdown of TA duties are indicated below:

TA duties with fixed hour allocation for the entire course or 1/8 time TA

- * 15 – 2.5 hr lecture attendance (MWF 10-12:30pm) = 37.5 hr 18.75 hr
 - * 12 – 50 min tutorial sessions (WF 2-3pm) = 12 hr 6 hr
 - * 12 – 50 min Q and A sessions (“office hours” WF 3-4pm) = 12 hr 6 hr
 - * 2 – 1 hr meetings to discuss course = 2 hr 1 hr
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Fixed hours (total of above) = 63.5 hr 31.75 hr

Time remaining for other duties 28.5 hr 14.25 hr

TA duties with flexible hour allocation

Many of the activities performed by TAs are on “extra time” outside the allocated TAship. These include:

- * Preparing new and learning old problem questions for tutorials, background reading 3-25 hr
- * Preparing PowerPoint presentations for tutorials 2-25 hr
- * Emailing students, answering PIAZZA discussion board questions 2.5-5 hr

Note: The flexible hour allocations are highly dependent on class size and TA course experience with more work during the initial TAship vs. subsequent TAships. The TAship generally runs over the allotted 46 worked hours (1/8 time TAship, CUPE 2278 contract). There is an understanding with the TAs in this course that more work is done in the first round vs. second and subsequent rounds of TAing. The extra time beyond 46 hours when averaged over 2 years, i.e. between two summers of back-to-back work (i.e. two 1/8 time appointments) is typically in the range of 8-15 hours. This is paid in addition to the TAship.

Lastly, course TAs are also expected to help mark & invigilate both midterm and final examinations. This has been paid as “marker” time, i.e. NOT part of the TAship.

- Help set-up, invigilate both exams (midterm, final with 1 hr set up and take down) = 12 hr 6 hr

- Help mark midterm and final exam (~20 hr 10 hr)

Preferences: for example, require the student to TA two 1/8 units in concurrent years or if the coordinator prefer two 1/4 TA units

It is expected that two (2) 1/8 TAships will be performed in consecutive years, that will fulfill the ¼ time TAship requirement.

BIOC 203 Fundamental of Biochemistry

Course Instructor: Robert Maurus

Number of Hours/week:

Number of available positions: 2 X 1/4 TA units (winter term)

Course description: Amino acids and proteins. Enzymes and enzymology. Human metabolic pathways. Structure, function and metabolism of carbohydrates including glycogen storage and gluconeogenesis.

Qualifications: B.Sc. in Biochemistry

Duties:

- 1) Attendance at lectures
- 2) Student tutoring and providing tutorial sessions
- 3) Providing short lectures to students in tutorial sessions
- 4) Invigilation of examinations
- 5) Attendance at course meetings
- 6) Evaluate reports according to specified criteria
- 7) Monitoring and providing help on course discussion website

Opportunity to give Lecture:

Possible for experienced TA's

Marking responsibilities:

Marking of course projects and exams is expected and will be paid for in addition to the TA salary.

Time Breakdown:

The TA will provide three 50 minute tutorial sessions a week to BIOC302 students. The TA will be expected to attend all BIOC302 lectures (36 hours) as well as organizational meetings. Preparation time for tutorials is 20 hours and attending meetings accounts for 3 hours. The maximum time worked will be 92 hrs (excluding vacation) for a quarter-time appointment.

BIOC 301 Molecular Biochemistry

Course Instructor: Jason Read

Number of Hours/week: see table below

Number of available positions: 16 X 1/4 TA units (fall and winter terms), prefer 8 1/2 TA units

Class size: 140-150 students, each TA section ~20 students

Course Description: Bioc 301 is intended to introduce students to the basics of biochemistry and molecular biology laboratory techniques and protocols. The course consists primarily of 2 sections; an ongoing molecular biology project and a small number of stand-alone experiments in more classical biochemistry.

The ongoing project currently consists of amplification and isolation of a gene encoding an enzyme, the manipulation and cloning of this gene into a suitable plasmid DNA molecule and the selection of this recombinant DNA molecule in bacteria. Further work involves the overexpression of the gene in question, followed by the isolation, identification and characterisation of the recombinant enzyme. The stand alone experiments have recently included ion exchange isolation and subsequent crystallisation of a protein target and a thorough exploration of enzyme kinetics.

In addition, students tour research labs, participate in small group discussions of peer-reviewed articles and present recent research articles in a journal club style.

Some of the protocols used in the course include polymerase chain reaction, restriction digests, plasmid preparation, ligation, preparation of competent bacteria, ion exchange, protein crystallisation, SDS-PAGE, spectroscopy and dot blots.

Time commitment: This course consists of 4 afternoon sections of 36 students each. Each section is split into two sub-groups of 18-20 students and each of these sub-groups is the responsibility of a single TA. Students will perform ~20 weeks of course work; most weeks will be wet lab work. The students will hand in 5 lab reports, present a journal article and write two exams during the course.

Lab TA Duties:

Preparation

- Understand all information in the course outline with respect to course policies
- Know the experimental theory, work flow and expected data
- Understand all instructions in the lab manual
- Be aware of any potential safety risks and proper procedures
- Know proper waste disposal procedures

Duties in the lab

- Arrive on time and do not leave until all students have left the lab
- Assist students in the proper execution of the experiment
- Ensure students are making timely progress through the day's work
- Facilitate students' understanding of the experiment and data
- Support students' development of scientific communication
- Be attentive and active in dealing with safety issues
- Ensure students return the lab to a proper state before leaving
- Foster a positive and supportive learning environment

Marking

- Evaluate reports and student performance according to specified criteria
- Provide constructive feedback on written lab reports
- Submit reports and grades by agreed on dates
- Assist in ensuring consistency between sections (expectations and grades)

Estimated TA Duty Time Breakdown

Duties	Hrs	Notes
Scheduled lab time	60	3 hrs per week, 20 weeks
Exam Marking	6	3 hours each for mid-course and final exams
Preparation	20	1 hr per week, 20 weeks
Student interaction outside of lab	16	Emails/in person discussions on report preparation and grading outside of scheduled lab hours
Grading – results reports	45	0.75 hrs per report – shorter reports (3 reports x 20 student/year)
Grading – formal reports	40	1.0 hrs per report – longer reports, substantial feedback (2 reports x 20 students/year)
Total Hours	~182	

BIOC 302 General Biochemistry

Course Instructor: Robert Maurus

Number of Hours/week:

Number of available positions: 3 X 1/4 TA units (fall term) & 4 X 1/4 TA units (winter term)

Course description: Metabolic reactions of lipids, steroids, amino acids and nucleotides; the biochemistry of replication, transcription and translation.

Qualifications: B.Sc. in Biochemistry

Duties:

- 1) Attendance at lectures
- 2) Student tutoring and providing tutorial sessions
- 3) Providing short lectures to students in tutorial sessions
- 4) Invigilation of University examinations
- 5) Attendance at course meetings
- 6) Monitoring and providing help on course discussion website

Opportunity to give Lecture:

Possible for experienced TA's

Marking responsibilities:

Marking of course exams is expected and will be paid for in addition to the TA salary.

Time Breakdown:

The TA will provide three 50 minute tutorial sessions a week to BIOC203 students. The TA will be expected to attend all BIOC203 lectures (36 hours) as well as organizational meetings. Preparation time for tutorials is: 20 hours and attending. Meetings accounts for 3 hours. The maximum time worked will be 92 hrs (excluding vacation) for a quarter-time appointment.

BIOC 402 Proteins: Structure and Function

Course Instructors: Joerg Gsponer, Calvin Yip

Number of Hours/week: 6

Number of available positions: 1 X 1/4 TA units (fall term)

Course description: Structural components of proteins, classification by primary, secondary, and tertiary structure, protein chemistry and purification, Chemical, physical and biological properties of nucleic acids and their role in replication, peptide and protein synthesis by chemical means and three-dimensional structure determination using X-ray diffraction and NMR.

Qualifications:

BSc. in Biochemistry, ideally a graduate student who is pursuing graduate research in a protein biochemistry or structural biology lab;

Strong background in protein structure and function, and competence in using protein structural analysis programs such as PyMol and Chimera

Excellent communication skills as the teaching assistant would need to explain concepts both orally and in written text

Enthusiastic about leading tutorials for 4th year students (~130 students).

Duties:

Attend 3 x 50-minute lectures per week (M W F, 9 to 9:50am)

Prepare and conduct one weekly 50-minute tutorial; format of these tutorials ranges from a 10-15 minute mini lecture combined with a question-and-answer session to facilitating exercises

Answer questions in person during tutorials, by e-mail, and in online forum

Invigilating two mid-term examinations and one final examination

Assist in marking two mid-term examinations and one final examination

BIOC 410 Nucleic Acids - Structure and Function

Course Instructor: Eric Jan

Number of Hours/week: 8

Number of available positions: 2 X 1/4 TA units (fall term)

Course description: Chemical, physical and biological properties of nucleic acids and their role in replication, transcription, translation and regulation of expression of genetic material. An important aspect of this course is to provide opportunities for students to apply their knowledge in experimental design and analysis. In groups of four, the students are assigned four main assignments during the term where they have to complete in weekly tutorials and outside of class.

Qualifications: Teaching assistant should be confident in explaining concepts both orally and in written text (email and online); Should have a strong foundation in DNA and/or RNA molecular biology. Enthusiastic about leading tutorials for 4th year students (~110 total, two TA positions available).

Duties: TA's run two weekly hour-long tutorial focusing on 4 group assignments. The class is split into four tutorials with each TA running two tutorials per week. TA's will provide a short 10-15 minute lecture and answer questions in the tutorial and by email.

Opportunity to give Lecture: mini lecture within tutorial

Marking responsibilities: Marking group assignments; approximately 15 groups per TA, four assignments. The answers are made up of short answers.

BIOC 421 - Recombinant DNA Techniques

Course instructor - Scott Covey

Number of hours/week: see table below

Number of available positions: 4 X ¼ TA units (winter term)

Course Description: BIOC 421 is a laboratory course that focuses on experiments and techniques relevant to molecular biology/biochemistry. The course covers basic experimental approaches including PCR, cloning, western blotting, and protein purification. Teaching assistants will supervise small groups (a maximum of 12 students) in the lab to assist with experimental procedures, analyzing data and managing the group. In addition teaching assistants will grade and provide substantial formative feedback to students on written lab reports. Teaching assistants will be required to be familiar with the theory of basic biochemistry techniques and have strong scientific writing skills.

Time Breakdown

Duties	Hrs	Notes
Scheduled lab time	44	4 hrs per week, 11 weeks
Lab time outside of scheduled hours	3	During weeks 4-6
Preparation	11	1 hr per week, 11 weeks
Student interaction	4	Discussions on report grading outside of scheduled time
Grading – report 1	18	1.5 hrs per report – substantial feedback to be provided
Grading – report 2	12	1 hr per report – less formative feedback required
Total	92	
Total (+ mandatory vacation time)	96	