



UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

1. **Course: BIOCHEMISTRY 403 – BIOCHEMISTRY LABORATORY TECHNIQUES II**

Lecture Sections: L01            TR                            09:30-10:45                            ST 059                            WINTER 2015

Instructors: Dr. R.A. Edwards                            BI 443                            220-5350                            redwards@ucalgary.ca  
                  Dr. G. Moorhead                                    BI 144A                            220-6238                            moorhead@ucalgary.ca

D2L course website: BCEM403 W2014

Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. **Prerequisites:** Chemistry 311 and Biochemistry 401 and 471  
See section 3.5.C in the Faculty of Science section of the online Calendar  
(<http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html>)

3. **Grading:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Midterm Exam	16%
Final Exam	34%
Lab Reports	40%
Lab book, Practical Assessment & Participation	10%

**A mark of  $\geq 58\%$  is the minimal passing grade for the lab component of this course.**

There will be a final exam scheduled by the Registrar's office.

“Each piece of work (assignment, laboratory report, midterm test or final examination) submitted by the student will be assigned a percentage score. The student’s average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade, bearing in mind that a failing grade will result if the student does not pass the combined lab component which consists of all components except the exams.”

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar
5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

The midterm in this course will be in-class on 10 February.

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:** Biochemistry Laboratory, Modern Theory and Techniques by Rodney Boyer

**Online Course Components:** List online tools being used in the class outside of those provided by the University course Management system and Top Hat classroom response system. Note: Top Hat is allowed for all classes and may be used for grades. Instructors using Top Hat should plan to accommodate students who do not have access to a cell phone or portable computing device. Course components that are free to all students and that are not dependent on prior accesses are allowed. Those with APPROVED associated optional or mandatory course fees must be listed in section 8.

7. **Examination Policy:** Non-programmable calculators will be allowed for use on the examinations. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Writing across the curriculum statement:** e.g. “In this course, the quality of the student’s writing in laboratory reports will be a factor in the evaluation of those reports.” See also [Section E.2](#) of the University Calendar.

9. **Human studies statement:** indicating whether students in the course may be expected to participate as subjects or researchers. See also [Section E.5](#) of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS. Students are expected to be familiar with <http://www.ucalgary.ca/pubs/calendar/current/sc-5-1.html> of the on-line calendar.

See also <http://www.ucalgary.ca/pubs/calendar/current/e-5.html>.

#### 10. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties.
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Academic Accommodation Policy:** Students with documentable disabilities are referred to the following links: Students with Disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html> [B.1](#) and Student Accessibility Services: <http://www.ucalgary.ca/access/>.
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep. Phone: 220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca); [Student Ombudsman](#)
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference - please participate in USRI Surveys.

Department Approval \_\_\_\_\_ ORIGINAL SIGNED \_\_\_\_\_ Date \_\_\_\_\_

UNIVERSITY OF CALGARY  
DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

**BIOCHEMISTRY 403**  
**BIOCHEMISTRY LABORATORY TECHNIQUES II**

TERM: Winter 2015 SECTION NO: L01

PREREQUISITE(S): Chemistry 311, Biochemistry 401 or 471

ANTIREQUISITE(S): Credit for both Biochemistry 403 and 541 will not be allowed.

Note: Students may not register in a course unless they have a grade of at least C- in each prerequisite course.

COURSE COORDINATOR: Dr. R.A. Edwards BI 443 220-5350 redwards@ucalgary.ca

LECTURES: T+R 09:30 – 10:45 ST 059

LABS: W 13:00 – 18:50 BI 117  
R 11:00 – 16:50 BI 117  
F 13:00 – 18:50 BI 117 TENTATIVE

TEXT: Biochemistry Laboratory, Modern Theory and Techniques by Rodney Boyer

- MARK DISTRIBUTION
- A. Composition of marks
- |  |     |
|--|-----|
| Midterm Exam                                   | 16% |
| Final Exam                                     | 34% |
| Lab Reports                                    | 40% |
| Lab book, Practical Assessment & Participation | 10% |
- B. Final Exam  
There will be a final examination scheduled by the Registrar's Office.
- C. Components of course for which a passing grade is essential  
Lab Assessment (protein purification and characterization).
- D. Grading Scale:  
A : above 86%; A- : between 86-82%;  
B+ : between 82-78%; B : between 78-74%; B- : between 74-70%;  
C+ : between 70-66%; C : between 66-62%; C- : between 62-58%;  
D+ : between 58-54%; D : between 54-50%; F : below 50%;  
Except Labs: F = Below 58%

## BCEM403 Winter 2015: Tentative Lecture Schedule

Jan.	13	Introduction to the course & Prep for Lab-1	RAE
	14/15	<b>Lab 1: Measuring [protein] and <math>\beta</math>-galactosidase Specific Activity</b>	RAE
	15	Principles of Cell breakage and protein precipitation.	RAE
	20	Prep for Lab-2	RAE
	21/22	<b>Lab 2: Ammonium sulfate precipitation of <math>\beta</math>-galactosidase</b>	RAE
	22	Principles of Ion exchange chromatography	RAE
	27	Prep for Lab-3	RAE
	28/29	<b>Lab 3: Ion exchange chromatography of <math>\beta</math>-galactosidase</b>	RAE
	29	Principles of Gel filtration chromatography	RAE
Feb	3	Prep for Lab-4	RAE
	4/5	<b>Lab 4: Gel filtration chromatography of <math>\beta</math>-galactosidase</b>	RAE
	5	Principles of Electrophoresis & Prep for Lab#5	RAE
	10	Midterm Exam in class	RAE
	11/12	<b>Lab 5: PAGE of <math>\beta</math>-galactosidase</b>	RAE
	12	Begin project preparation.	RAE
	15-22	Reading Week	
	24	Western-Blotting & Antibodies-1	GM
	25/26	<b>No Lab this week. Report Writing</b>	
	26	Western-Blotting & Antibodies-2	GM
Mar	3	Bio-Affinity Chromatography-1 & Prep for Lab#6	GM
	4/5	<b>Lab 6: Western blotting</b>	GM/RAE
	5	Bio-Affinity Chromatography-2	GM
	10	Enzyme Kinetics & Prep for Lab-7	RAE
	11/12	<b>Lab 7: His-tag chromatography</b>	GM/RAE
	12	Ligand Binding by Enzyme Kinetics	RAE
	17	Prep for project lab Lab-8	RAE
	18/19	<b>Lab 8: Project #1 on Ligand Binding by Enzyme Kinetics</b>	RAE
	19	Principles of Circular Dichroism (CD)	RAE
	24	Difference spectroscopy & Prep for Lab-9	RAE
	25/26	<b>Lab 9: Protein Stability by Absorbance, Fluorescence, and CD</b>	RAE
	26	Analysis of spectroscopic data.	RAE
Mar	31	Prep for project Lab-10	RAE
	1/2	<b>Lab 10: Project #2 on Ligand Binding by Spectroscopy and/or Equilibrium Dialysis</b>	RAE
	2	Ligand Binding	RAE
	7	Ligand Binding & Debrief on projects	RAE
	8/9	<b>Finish Project #2 and Report Writing</b>	RAE
	9	Project wrap-up.	RAE
	14	Synopsis and Review	RAE
		Final Exam to be scheduled by the Registrar.	