



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

1. **Course: CMMB 527 - IMMUNOLOGY**

Lecture Section: L01 MWF 15:00-15:50 SS 109 WINTER 2015
Instructor: Dr. C. Finney BI 461 220-2687 constance.finney@ucalgary.ca

D2L Course Website: CMMB527

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

2. **PREREQUISITE(S):** Biology 311 and 331 and CMMB 343 and one of BCEM 401 or 443
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	30 %	24th February 6-8pm	ICT 116
Lab	30 %		
Final Exam	40 %		

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

Letter grade conversion scheme for CMMB527:

90 =	A+
85 =	A
80 =	A-
77 =	B+
73 =	B
70 =	B-
66 =	C+
62 =	C
60 =	C-
55 =	D+
50 =	D
below 50	F

"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."

The student cannot pass the course as a whole unless they have passed at least one component of the lab based examinations (reports or exam) and one component of the lecture based examinations (midterm or final exam).

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.

Midterm February 24, 2015 6-8 pm ICT 116

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:** TEXT: Required: CMMB 527 Lab Manual. (Buy at bookstore)
Recommended: Owen, et al. Kuby Immunology. 7th Edition 2013. W.H. Freeman & Co.

7. **Examination Policy:** All examinations are closed book. The use of camera devices, MP3 Players and headphones, or wireless access devices such as cell phones, Blackberries, etc., during the examination will not be allowed. Calculators are not allowed for this examination.

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.
SU Faculty Rep. Phone: 220-3913 Email: 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). Your responses make a difference - please participate in USRI Surveys.

Department Approval _____ ORIGINAL SIGNED _____ Date _____

Associate Dean’s Approval for
out of regular class-time activity: _____ ORIGINAL SIGNED _____ Date: _____
M527 co W15; 10/28/2014 2:18 PM

UNIVERSITY OF CALGARY
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

**CMMB 527
IMMUNOLOGY**

TERM: Winter 2015

SECTION NO: L01

PREREQUISITES:

Biology 311 and 331 and CMMB 343 and one of Biochemistry 401 or 443

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

COURSE COORDINATOR:

Dr. C. Finney

COURSE INSTRUCTORS:

Dr. C. Finney	BI 461	220-2687	constance.finney@ucalgary.ca
Dr S. Gilch	HRIC 1AC66	210-7578	sgilch@ucalgary.ca
Dr J. Wasmuth	HRIC 1AC68	210-8507	jwasmuth@ucalgary.ca
Dr. C. Mody	HMRB 273	220-8479	cmody@ucalgary.ca
Dr. L. Gedamu	BI 350	220-5556	lgedamu@ucalgary.ca

LABORATORY STAFF:

Heidi Gibson EEL 301b/BI 132 220-5851

LECTURES:

MWF 15:00 – 15:50 SS 109

LABS:

R 09:00/12:00/15:00 BI 132

TEXT:

Required: CMMB 527 Lab Manual. (Buy at bookstore)

Recommended: Owen, et al. Kuby Immunology. 7th Edition 2013. W.H. Freeman & Co.

MARK DISTRIBUTION:

A. Composition of Final Grade

Midterm Examination	30%, (out of class)
Lab - Reports	15%
- Exam	15%
Final Examination	40%

B. Final Exam

There will be a cumulative final examination scheduled by the Registrar's Office.

CMMB 527 LAB SCHEDULE 2015

DATE	LAB	EXPERIMENT	ASSIGNMENT
Jan 15	Lab 1	Organs and cells of the mononuclear-phagocyte system	Technique mark
Jan 22	Lab 2	DEAE Sephadex purification of antibodies assayed by phage neutralization (PNA)	
Jan 29	Lab 3	Zone electrophoresis of proteins in plasma and protein determination	Assignment 1 – summary due Feb 12
Feb 5		NO LAB	
Feb 12	Lab 4	ELISA	Assignment 2 – results and discussion due Feb 26
Feb 19		NO LAB	
Feb 26	Lab 5	Immunofluorescence/Colorzyme Assay, Western Blot demo	Technique mark
Mar 5		NO LAB	
Mar 12	Lab 6	Gel Diffusion	Assignment 3 – full lab report and question set due Mar 26
Mar 13	Lab 6	Open Lab	
Mar 19		NO LAB	
Mar 26	Labs 7 & 8	Lymphocyte purification & E-Rosette	
Apr 2		NO LAB	
Apr 9		LAB EXAM	

APPENDICES AND DEMONSTRATIONS

Appendix I:	Ag-Ab Detection Methods (Comparison of methods) Use Appendix I in conjunction with relevant experiments
Appendix II:	Crossed Immunoelectrophoresis Demonstration
Appendix III	Lab report expectations
Appendix IV	reparation of antisera
Demonstrations:	SDS-PAGE, Western Blot, Immunostaining, Poster and equipment demonstration in lab

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70 =	B-
66 =	C+
62 =	C
60 =	C-
55 =	D+
50 =	D
below 50	F

TENTATIVE LECTURE SCHEDULE 2015 (Exact sequence might still change)

Day	Date	Lecture	Instructor	
Mon	Jan-12	(1) Intro	Finney	
Wed	Jan-14	(2) Overview of Innate & Acquired Immunity	Finney	
Thurs	Jan-15	Lab 1: Organs of Immune System (technique mark)		
Fri	Jan-16	(3) Cells of the Immune System	Finney	
Mon	Jan-19	(4) Tissues & Organs of the Immune System	Finney	
Wed	Jan-21	(5) Pattern Recognition and Signalling	Finney	
Thurs	Jan-22	Lab 2: Antibody purification		
Fri	Jan-23	(6) Innate Effectors (complement & acute phase proteins)	Finney	
Mon	Jan-26	(7) Innate Effector Mechanisms	Finney	
Wed	Jan-28	(8) Leukocyte Migration	Finney	
Thurs	Jan-29	Lab 3: Electrophoresis		
Fri	Jan-30	(9) Acute & Chronic Inflammation	Finney	
Mon	Feb-02	(11) Antigens	Finney	
Wed	Feb-04	(12) Antigen-Ab Interactions	Finney	
Thurs	Feb-05	No Lab		
Fri	Feb-06	(13) Ig Structure and Function (1)	Gilch	
Mon	Feb-9	(14) Ig Structure and Function (2)	Gilch	
Wed	Feb-11	(15) Ig Genetics	Gilch	
Thurs	Feb-12	Lab 4: ELISA		Lab due
Fri	Feb-13	(16) T cell Receptor Genetics	Finney	
Mon	Feb-16	Reading Week		
Wed	Feb-18	Reading Week		
Fri	Feb-20	Reading Week		
Mon	Feb-23	(17) MHC Genetics - Structure	Finney	
Tues	24-Feb	Midterm Exam (Lectures 1-16)		Midterm
Wed	Feb-25	(18) MHC Structure - Antigen Processing and Presentation	Finney	
Thurs	Feb- 26	Lab 5: Immunofluorescence/Western Blot (technique mark)		
Fri	Feb- 27	(25) Immune Assays 1	Finney	
Mon	Mar-02	(26) Immune Assays 2	Finney	
Wed	Mar-04	(27) Immune Assays 3	Finney	
Thurs	Mar-05	No Lab		
Fri	Mar-06	Midterm Debrief	Finney	
Mon	Mar-9	(19) Cell Mediated Immunity - T cell ontogeny	Mody	
Wed	Mar-11	(20) Cell Mediated Immunity - TCR	Mody	
Thurs	Mar-12	Lab 6: Gel Diffusion		Lab due
Fri	Mar-13	(21) Cell Mediated Immunity - TCR signalling	Mody	
Mon	Mar-16	(22) Cell Mediated Immunity - Cytokines	Mody	
Wed	Mar-18	(23) Cell Mediated Immunity - Cytokine Signalling	Mody	
Thurs	Mar-19	No Lab		
Fri	Mar-20	(24) Cell Mediated Immunity - Effector Responses (T, NK, mophage)	Mody	
Mon	Mar-23	(28) Immunology & Society	Finney	
Wed	Mar-25	(32) Hypersensitivity	Finney	
Thurs	Mar-26	Labs 7 & 8: Lymphocyte purification		Lab due
Fri	Mar-27	(30) Immune regulation and tolerance	Finney	
Mon	Mar- 30	(29) Immunodeficiency & transplant	Finney	
Wed	Apr-01	(31) Autoimmunity	Finney	
Thurs	Apr-02	No Lab		
Fri	Apr-03	Good Friday		
Mon	Apr-06	(33) Pathogens & the Immune System	Gedamu	

Wed Apr-08 (34) Vaccines
Thurs **Apr-09** **Lab Exam**
Fri Apr-10 (35) Comparative Immunology
Mon Apr-13 (36) TOPIC CHOSEN BY STUDENTS
Wed Apr-15 (37) FINAL REVIEW SESSION

Gedamu

Exam

Wasmuth

Finney

Finney