



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	ST 131	WINTER 2018
Lab Sections:	B01	Thursday	9:00-11:50	BI 175	
	B02	Thursday	12:00-2:50	BI 175	
	B03	Thursday	3:00-5:50	BI 175	
Coordinator:	Dr. Constance Finney				
Instructors:	Dr. Constance Finney	BI 461	220-2687	constance.finney@ucalgary.ca	
	Dr. L. Gedamu	BI 350	220-5556	lgedamu@ucalgary.ca	
LAB STAFF:	Heidi Gibson	EEL 301b/BI 175			

D2L Course Website: CMMB527 Winter 2018
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:

Quizzes	6 %	Ongoing, see course schedule on D2L
Worksheets	7%	Ongoing, see course schedule on D2L
In Class Exercises	4%	Ongoing, see course schedule on D2L
Midterm Exam 1	9 %	Wednesday Feb. 14 (in class)
Midterm Exam 2	9 %	Friday March 16 (in class)
Lab	32 %	Quizzes (3.5%), Lab reports (13.5%). Lab Exam (15%)
Final Exam	33 %	Set by Registrar

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

Each piece of work (quiz, 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 (>50%) at least one component of the lab based examinations (reports or exam) and one component of the lecture based examinations (midterm or final exam).

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	92	88	84	80	76	72	68	64	60	56	50

- 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.3](#) of the University Calendar
- 5. Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours. For Lab 6, there is an open lab session where at least one member of each pair of students will need to come to the lab outside of the regular lab times. A sign-up sheet will be available with multiple time slots to allow students the greatest flexibility.

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 (posted on D2L)
Recommended: Owen, et al. Kuby Immunology. 7th Edition 2013. W.H. Freeman & Co.

Online Course Components: Some teamwork resources are provided by ITPMetrics, a University of Calgary-based system of secure web-based tools for forming teams and doing peer evaluations. These tools are free to all students and are not dependent on prior access.

TENTATIVE LECTURE & LAB SCHEDULE 2018 (Exact sequence may differ slightly)

Day	Date	Lecture	Instructor
Mon	Jan-8	(1) Intro	Finney
Wed	Jan-10	(2) Overview of Innate & Acquired Immunity	Finney
Thurs	Jan-11	Lab 1: Organs of Immune System (technique mark, 1%)	
Fri	Jan-12	(3) Cells of the Immune System (Workshop 1 – sit in your teams)	Finney
Mon	Jan-15	(4) Tissues & Organs of the Immune System	Finney
Wed	Jan-17	(5) Pattern Recognition and Signalling	Finney
Thurs	Jan-18	Lab 2: Antibody purification	
Fri	Jan-19	(6) Innate Effectors (Workshop 2 – sit in your teams)	Finney
Mon	Jan-22	(7) Innate Effector Mechanisms	Cobo
Wed	Jan-24	(8) Leukocyte Migration	Cobo
Thurs	Jan-25	Lab 3: Electrophoresis	
Fri	Jan-26	(9) Acute & Chronic Inflammation	Cobo
Mon	Jan-29	(10) Antigens	Cobo
Wed	Jan-31	(11) Ig Structure and Function (1)	Cobo
Thurs	Feb-01	Lab 4: ELISA	
Fri	Feb-02	(12) Ig Structure and Function (2)	Cobo
Mon	Feb-05	(13) Antigen-Ab Interactions	Finney
Wed	Feb-7	(14) Ig Genetics	Finney
Thurs	Feb-8	Lab 5: Immunofluorescence (technique mark 1%)	
Fri	Feb-09	(15) T cell Receptor Genetics (Workshop 3 – sit in your teams)	Finney
Mon	Feb-12	(16) MHC Genetics - Structure	Finney
Wed	Feb-14	Midterm 1	
Thurs	Feb-15	No Lab	
Fri	Feb-16	(17) Antigen Processing and Presentation (Workshop 4 – sit in your teams)	Finney
Mon	Feb-18	READING WEEK	
Wed	Feb-21	READING WEEK	
Thurs	Feb-22	READING WEEK	
Fri	Feb-23	READING WEEK	
Mon	Feb-26	(18) Cell Mediated Immunity - T cell ontogeny	Mody
Wed	Feb-28	(19) Cell Mediated Immunity - TCR	Mody
Thurs	Mar-01	Lab 6: Gel Diffusion	
Fri	Mar-02	(20) Cell Mediated Immunity - TCR signalling	Mody
Mon	Mar-05	(21) Cell Mediated Immunity - Cytokines	Mody
Wed	Mar-07	(22) Cell Mediated Immunity - Cytokine Signalling	Mody
Thurs	Mar-08	No Lab	
Fri	Mar-09	(23) Cell Mediated Immunity - Effector Responses (T, NK, mophage)	Mody
Mon	Mar-12	(24) Immunology & Society (Workshop 5 – sit in your teams)	Finney
Wed	Mar-14	(25) Immune Assays 1	
Thurs	Mar-15	No Lab	
Fri	Mar-16	Midterm 2	Finney
Mon	Mar-19	(26) Immune Assays 2	Finney
Wed	Mar-21	(27) Immune Assays 3 (Workshop 6 – sit in your teams)	Finney
Thurs	Mar-22	Labs 7: Lymphocyte purification (technique mark 1%)	
Fri	Mar-23	(28) Hypersensitivity	Finney
Mon	Mar-26	(29) Tolerance and Automimmunity	Finney
Wed	Mar-28	(30) Immunodeficiency	Finney
Thurs	Mar-29	Lab Review Session (mandatory)	

Fri	Mar- 30	GOOD FRIDAY	
Mon	Apr-02	(31) Pathogens & the Immune System - Leishmania	Gedamu
Wed	Apr-04	(32) Vaccines	Gedamu
Thurs	Apr-05	Lab Exam	
Fri	Apr-06	(33) Transplantation (Workshop 7 – sit in your teams)	Finney
Mon	Apr-09	(34) Pathogens & the Immune System - Intestinal worms	Finney
Wed	Apr-11	(35) Student Choice	Finney
Fri	Apr-13	(36) FINAL REVIEW SESSION	Finney

Mon	Mar- 26	(29) Tolerance and Automimmunity	Finney
Wed	Mar- 28	(30) Immunodeficiency	Finney
<i>Thurs</i>	<i>Mar- 29</i>	<i>Lab Review Session (mandatory)</i>	
Fri	Mar- 30	GOOD FRIDAY	
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Thurs	Apr-05	Lab Exam	
Fri	Apr-06	(33) Transplantation (workshop 6)	Finney
Mon	Apr-09	(34) Pathogens & the Immune System - Intestinal worms	Finney
Wed	Apr-11	(35) Student Choice	Finney
Fri	Apr-13	(36) FINAL REVIEW SESSION	Finney

Learning Outcomes

By the end of this course (CMMB527: Immunology), successful students will be able to:

1. Compare and contrast components of the immune system.
2. Illustrate how the immune system evolved, and how it develops within vertebrates.
3. Distinguish innate from adaptive immune responses.
4. Demonstrate proficiency in basic immunological laboratory techniques such as the ELISA assay.
5. Differentiate between immune assays and defend the use of a particular assay in a given situation.
6. Relate immune responses to real-world examples, such as infectious disease, transplants and allergies.