



**UNIVERSITY OF  
CALGARY**

DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

**1. Course: ZOOLOGY 483 – PRINCIPLES IN PARASITISM**

Lecture Section(s)	L01	TR	9:30-10:50	BI 587	Fall 2015
<b>Instructor(s):</b>	Mike Belosevic		(Biological Sciences, U of A)		mike.belosevic@ualberta.ca
	Dr. Al Shostak		(Biological Sciences, U of A)		al.shostak@ualberta.ca
	Dr. A. Buret		(Biological Sciences, U of C)		aburet@ucalgary.ca

Teaching Assistant: Christina Amat, (403) 220 8573; [cb.amat@ucalgary.ca](mailto:cb.amat@ucalgary.ca) Biosciences 455

Course website or Desire 2 Learn (D2L) course name: ZOOL 483 L01 - (Fall 2015) - Principles In Parasitism

Biological Sciences Department BI 186 403-220-3140 [biosci@ucalgary.ca](mailto:biosci@ucalgary.ca)

- 2. Prerequisites: CMMB 343 OR ZOOLOGY 375 or instructor's approval.**  
See section 3.5.C in the Faculty of Science section of the online Calendar  
[www.ucalgary.ca/pubs/calendar/current/sc-3-5.html](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:

Mid-term lecture exam:	15%	Thursday, October 15, 2015 at 09:30-10:50 in Biosci 587.
Final lecture exam:	45%	Tuesday, December 15, 2015 at 09:00-11:00. in Biosci 587 *
Mid-term lab exam:	15%	Wednesday, October 7, 2015 at 15:00-15:50 in Biosci 587
Final lab exam:	25%	Wednesday, December 2, 2015 at 15:00-15:50 in Biosci 587

\* To be confirmed. The final lecture exam date and time will be finalized by the Registrar's office.

There will be a two-hour final lecture examination.

**Passing grades in both the lab and lecture components are essential if the student is to pass the course as a whole.**

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 an F grade will result if the student does not pass the overall lab OR the overall lecture component.

**Format of Exams**

Lecture exams are multiple choice. Lab exams are a combination of multiple choice and short answer questions.

- 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. Sample lecture and lab exam questions are posted on the course web site.
- 5. Course Materials:** There are no required textbooks. The following are good general textbooks, but are not essential: *Foundations of Parasitology*, by G. D. Schmidt and L. S. Roberts. *Modern Parasitology*, by F. E. G. Cox.
- 6. Examination Policy:** No electronic or written aids (eg. cell phones, tablets, computers, PDAs, notes, textbooks) will be allowed during writing of any exams. Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, Section G, on Examinations: <http://www.ucalgary.ca/pubs/calendar/current/g.html>.

## 7. ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

## 8. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **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 K. Student Misconduct (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) 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 at <http://www.ucalgary.ca/emergencyplan/assemblypoints>.**

(c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at [http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf).

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca) or phone 403 220-3140.

(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) Website  
<http://www.su.ucalgary.ca/home/contact.html>.  
Student Ombudsman: [www.ucalgary.ca/provost/students/ombuds](http://www.ucalgary.ca/provost/students/ombuds); [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca) 220-6420

(a) **(g) INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** 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.

(b) 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 \_\_\_\_\_

Associate Dean's Approval for  
out of regular class-time activity: \_\_\_\_\_ ORIGINAL SIGNED \_\_\_\_\_ Date: \_\_\_\_\_  
Z483 F15; 9/8/2015 11:52 AM

## Course Description

**An introduction to protozoan, helminth and arthropod parasites of animals; principles of host and parasite adaptations, host defense, pathology, epidemiology, and ecology, and control of parasitic infections. World wide web-based laboratory tutorials emphasize morphology, life cycles, behavior, systematics and life history of parasites.**

## Learning Objectives

By the end of the course, the student should:

- recognize major groups of animal parasites.
- understand the general biology of all major groups of parasites and the detailed biology of some prominent example parasites.
- understand how parasites find, establish in, and persist in their hosts.
- understand how host individuals defend against parasitic infections.
- understand how parasitic infections cause disease.
- understand how host populations respond to the presence of parasitism.
- understand the principles of parasite control and treatment

## GRADING SCHEME FOR

### ZOOL 483

(% score represents the minimum score necessary for that grade)

<u>%</u>	<u>letter grade</u>
90	A+
85	A
80	A-
75	B+
70	B
65	B-
60	C+
55	C
50	C-
47	D+
44	D
44<	F

## Lecture Schedule\*

Lec #	Date	Topic	Instructor
1	8-Sep	Introduction to course, Basic terminology	Shostak
		<b>Section I: Example Parasites</b>	
2	10-Sep	Intracellular protozoan: <i>Plasmodium</i>	Shostak
3	15-Sep	Extracellular protozoan: <i>Giardia</i>	Buret
4	17-Sep	Fluke: <i>Schistosoma</i>	Shostak
5	22-Sep	Tapeworm: <i>Echinococcus</i>	Shostak
6	24-Sep	Roundworm: <i>Trichinella</i>	Shostak
7	29-Sep	Tick: <i>Dermacentor</i>	Shostak
		<b>Section II: Overview of host-parasite interactions</b>	
8	1-Oct	Host finding	Shostak
9	6-Oct	Establishment in the host	Shostak
10	8-Oct	Pathogenesis of parasitic diseases	Buret
11	13-Oct	Nested structure of parasite populations	Shostak
12	15-Oct	<b>Mid-term Lecture Examination (covers lectures 1-10)</b>	
		<b>Section III: Host defense against parasites</b>	
13	20-Oct	Immunoparasitology I	Belosevic
14	22-Oct	Immunoparasitology II	Belosevic
15	27-Oct	Immunoparasitology III	Belosevic
16	29-Oct	Immunoparasitology IV	Belosevic
		<b>Section IV: Parasite interactions with host populations</b>	
17	3-Nov	Populations I: Parasite transmission in host populations	Shostak
18	5-Nov	Populations II: Evolution of host-parasite associations	Shostak
		<b>Section V: Parasitic damage to the host</b>	
19	17-Nov	Patho I: Immunopathology (hypersensitivity)	Buret
20	19-Nov	Patho II: Pathophysiology in the blood	Buret
21	24-Nov	Patho III: Pathophysiology in the gut and beyond	Buret
		<b>Section VI: Control of parasitic infections</b>	
22	26-Nov	Drugs	Buret
23	1-Dec	Life-cycle measures, vaccines, integrated control	Shostak
24	3-Dec	Course evaluation / Question period	All
	TBA	<b>Final lecture exam (cumulative, covers lectures 1-24)</b>	

\*Lecture topics subject to change

## Laboratory Schedule

Lab #	Date	Topic
1	16-Sep	Example parasites
2	23-Sep	Diversity: Protozoa
3	30-Sept	Diversity: Myxosporea & Digenea
Exam†	7-Oct	<b>Midterm Lab Exam, covers Labs 1-3 (CCIS L1-160 15:00-15:50)</b>
4	14-Oct	Diversity: Cestoda
5	21-Oct	Diversity: Monogenea & Acanthocephala
6	28-Oct	Diversity: Nematoda
7	4-Nov	Diversity: Arthropoda
8	18-Nov	Adaptations for host finding & attachment
9	25-Nov	Adaptations for feeding, reproduction & dispersal
Exam†	2-Dec	<b>Final Lab Exam, covers Labs 1-9 (CCIS L1-160 15:00-15:50)</b>

## Missed Term Exams

A student who cannot write a term examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for deferral of the midterm weight to the final lecture or laboratory examination. Students missing a **midterm exam** without valid reason and adequate documentation will receive a grade of 0 on that exam. Students missing a midterm exam with valid reason and adequate documentation will have the weight of that exam added to the respective final exam. **There will be no deferred midterm lecture or laboratory exam.**

Students missing the **final laboratory exam** without valid reason and adequate documentation will receive a grade of 0. Students missing the final lab exam with valid reason and acceptable documentation will be permitted to take a deferred final lab exam. The deferred exam will take place at a time mutually agreeable to the instructor(s) and student, but will normally occur prior to the time of the scheduled final lecture exam. The student must contact the laboratory instructor within 48 hours of the missed exam to make arrangements for the deferred exam. The deferred exam must be completed before a final grade in the course will be issued.

## For a Deferred Final Lecture Exam

Students missing the **final lecture exam** with valid reason and acceptable documentation will be permitted to take a deferred final lecture exam, in accordance with the regulations in the Calendar. A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Such an application must be made to the student's Faculty office within 48 hours of the missed examination and must be supported by a Statutory Declaration (*in lieu* of a medical statement form) or other appropriate documentation. Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of Facts to gain a deferred examination is a serious breach of the *Code of Student Behaviour*.

A student who writes the final examination and fails the course may apply for a reexamination. Reexaminations are rarely granted in the Faculty of Science. These exams are governed by University and Faculty of Science Regulations. Misrepresentation of Facts to gain a reexamination is a serious breach of the Code of Student Behaviour.

## EXAMS

Your student photo I.D. may be required at exams to verify your identity. Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed.

## Obligatory statements

Students are expected to commit to the highest standards of academic integrity and honesty. Students are particularly urged to avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

## Disclaimer

Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.

## Note

Recording is permitted only with the prior written consent of the professor or if recording is part of an approved accommodation plan.

## Copyright

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