FORMAT 2

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**
See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL
Attach a syllabus, except if dropping a course.

SUBMITTED BY:

Department	**Biology & Wildlife**	**College/School**	**CNSM**
Prepared by	**Andrea Ferrante and Diane Wagner**	**Phone**	**474-5916; aferrante@alaska.edu**
Email Contact	**diane.wagner@alaska.edu**	**Faculty Contact**	**Andrea Ferrante**

1. COURSE IDENTIFICATION: As the course now exists.

Dept	Course #	No. of Credits
BIOL	**F465**	**3**

COURSE TITLE	**Immunology**

2. ACTION DESIRED: √ Check the changes to be made to the existing course.

Change Course	X	If Change, indicate below what is changing.	Drop Course	

NUMBER		**TITLE**		**DESCRIPTION**	
PREREQUISITES*				***FREQUENCY OF OFFERING***	X

*Prerequisites will be *required* before a student is allowed to enroll in the course.

CREDITS (including credit distribution)				***COURSE CLASSIFICATION***		
ADD A STACKED LEVEL (400/600) *Include syllabi.*	X	Dept.	DVM	Course #	606	

How will the two course levels differ from each other? How will each be taught at the appropriate level?:	As evidenced in the attached syllabi and explained in point 13 (Justification for action requested), the two courses share the bulk of the content. However, students enrolled in DVM F606 will experience a greater degree of challenge through a series of assignments focused on veterinary immunology. For instance, they will be asked to write papers as home assignment every two weeks, in which they are invited to discuss the immune mechanisms responsible for specific conditions of veterinary interest. Such an assignment will not be part of the BIOL465 load, in that students enrolled in the latter course will have to complete less demanding assignments as homework. DVM F606 students will be responsible to lead weekly journal article discussions, inclusive of power point presentation, whereas undergraduate students will be asked to read the article, participate in the discussion and, one at the time, will be paired with the presenting student to support the discussion. Only DVM F606 students, pooled in groups of 3-4 individuals, will be asked to work on a poster presentation in which they will have to play the role of the "medical-science liaison" and present pharmacological compounds of immunological interests adopted in the veterinary practice. Finally, commensurate with these different expectations, in-class partial tests and final exams will be more challenging for DVM students and will incorporate veterinary examples and implications.

ADD NEW CROSS-LISTING	X	Dept. & No.	DVM 606	Requires approval of both departments and deans involved. Add lines at end of form for additional signatures.
STOP EXISTING CROSS-LISTING		Dept. & No.		Requires notification of other department(s) and mutual agreement. Attach copy of email or memo.
OTHER (specify)				

RECEIVED
SEP 23 2014
Dean's Office
College of Natural Science & Mathematics

9/25/14 Governance TLB

3. *COURSE FORMAT*

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council **and** the appropriate Faculty Senate curriculum committee. Furthermore, **any core course compressed to less than six weeks must be approved by the Core Review Committee.**

COURSE FORMAT: (check **all** that apply)		*1*		*2*		*3*		*4*		*5*	X *6 weeks to full semester*
OTHER FORMAT (specify all that apply)											
Mode of delivery (specify lecture, field trips, labs, etc.)	**Lecture**										

4. **COURSE CLASSIFICATIONS:** (undergraduate courses only. Use approved criteria found in Chapter 12 of the curriculum manual. If justification is needed, attach separate sheet.)

H = Humanities		S = Social Sciences			
Will this course be used to fulfill a requirement for the baccalaureate core?	**YES**		**NO**	**X**	

IF YES*, check which core requirements it could be used to fulfill:

O = Oral Intensive, ***Format 6** also submitted		W = Writing Intensive, ***Format 7** submitted		X = Baccalaureate Core	

4.A ***Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.***

YES		**NO**	**X**

5. **COURSE REPEATABILITY:**

Is this course repeatable for credit?	**YES**		**NO**	**X**
Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).				
How many times may the course be repeated for credit?		**TIMES**		
If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?		**CREDITS**		

6. ***COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking, clearly showing the changes you want made. (Underline new wording ~~strike through old wording~~ and use complete catalog format including dept., number, title, credits and cross-listed and stacked.)***

Example of a complete description:

PS F450 Comparative ~~Aboriginal~~ Indigenous Rights and Policies (s)
3 Credits
Offered As Demand Warrants
~~Case study~~ Comparative approach ~~in assessing Aboriginal~~ to analyzing Indigenous rights and policies in different nation-state systems. ~~Seven Aboriginal situations~~ Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. Prerequisites: Upper division standing or permission of instructor. (Cross-listed with ANS F450.) (3+0)

BIOL F465 Immunology

3 Credits
Offered ~~Spring~~ Fall

Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS). Prerequisites: BIOL F115X and BIOL F116X and BIOL F310; or BIOL F~~111~~213X and BIOL F~~112~~214X; or permission of instructor. Cross-listed and stacked with DVM 606. (3+0)

DVM F606 Immunology

3 Credits
Offered Fall

Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS). Prerequisites: acceptance into the Professional Veterinary Program; or permission of instructor. Cross-listed and stacked with BIOL F465. (3+0)

7. COMPLETE CATALOG DESCRIPTION AS IT SHOULD APPEAR AFTER ALL CHANGES ARE MADE:

BIOL F465 Immunology

3 Credits
Offered Fall

Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS). Prerequisites: BIOL F115X and BIOL F116X and BIOL F310; or BIOL F213X and BIOL F214X; or permission of instructor. Cross-listed and stacked with DVM 606. (3+0)

DVM F606 Immunology

3 Credits
Offered Fall

Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS). Prerequisites: acceptance into the Professional Veterinary Program; or permission of instructor. Cross-listed and stacked with BIOL F465. (3+0)

8. GRADING SYSTEM: Specify only one.

LETTER:	X	PASS/FAIL:	

9. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

The stacking and cross-listing of this course will have little impact on the Biology & Wildlife Department, since it is already part of the instructor's regular workload. Classroom space suitable to the larger class size is available.

10. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No		Yes	X	K. Jensen contacted in 2012

11. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

The cross-listing and stacking of this course represents efficient use of faculty and facilities within CNSM. It will provide cost savings to CNSM and DVM by circumventing the need to hire additional faculty and provide additional space, while fulfilling the need to teach basic immunology to veterinary students.

12. POSITIVE AND NEGATIVE IMPACTS

*Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.*

We anticipate positive impacts for DVM and only minor negative impacts to Biology & Wildlife. The shift in course offering from spring to fall may require a change to timing of offering of another course in order to balance electives across the year. In addition, B&W will lose the option of reducing the frequency with which it offers BIOL F465 in the future, because DVM F606 must be offered every year. No additional programs or departments should be affected by this change.

13. JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

The proposed changes to BIOL F465 will accommodate the new UAF program in Veterinary Medicine. The program is a partnership between UAF, which will provide the first 2 years of graduate-level veterinary courses, and Colorado State University, which will provide the final 2 years of courses and training. First-year students in the DVM program are required to take a basic immunology course. The content necessary is very similar to what was already offered in BIOL F465, and as a result no change to the content of the course is required to accommodate the cross-listing. The course syllabus has been approved by CSU and meets their accreditation requirements. Students enrolled in DVM F606 will experience a greater degree of challenge through a series of assignments focused on veterinary immunology. For instance, they will be asked to write papers as home assignment in which they are invited to discuss the immune mechanisms responsible for specific conditions of veterinary interest. Such an assignment will not be part of the BIOL465 load, in that students enrolled in the latter course will have to complete less demanding assignments as homework. DVM F606 students will be responsible to lead weekly journal article discussions, inclusive of power point presentation, whereas undergraduate students will be asked to read the article, participate in the discussion and, one at the time, will be paired with the presenting student to support the discussion. Only DVM F606 students, pooled in groups of 3-4 individuals, will be asked to work on a poster presentation in which they will have to play the role of the "medical-science liaison" and present pharmacological compounds of immunological interests adopted in the veterinary practice. Finally, commensurate with these different expectations, in-class partial tests and final exams will be more challenging for DVM students and will incorporate veterinary examples and implications.

APPROVALS: (Additional signature blocks may be added as necessary.)

	Date	8/7/2014
Signature, Chair, Program/Department of:	Biology + Wild life	
	Date	9-23-14
Signature, Chair, College/School Curriculum Council for:	CNSM	
	Date	9/23/14
Signature, Dean, College/School of:	CNSM	

Offerings above the level of approved programs must be approved in advance by the Provost:

	Date	
Signature of Provost (if applicable)		

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE.

	Date	

Signature, Chair
Faculty Senate Review Committee: ___Curriculum Review ___GAAC

___Core Review ___SADAC

ADDITIONAL SIGNATURES: ***(As needed for cross-listing and/or stacking; add more blocks as necessary.)***

	Date	8/15/14	
Signature, Chair, Program/Department of:	Veterinary Medicine		
	Date		
Signature, Chair, College/School Curriculum Council for:			
	Date		
Signature, Dean, College/School of:			

Note: If removing a cross-listing, attach copy of email or memo to indicate mutual agreement of this action by the affected department(s). If degree programs are affected, a Format 5 program change form must also be submitted.

ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at:
http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/
The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:
❑Title, ❑ number, ❑credits, ❑prerequisites, ❑ location, ❑ meeting time
(make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
❑ Name, ❑ office location, ❑ office hours, ❑ telephone, ❑ email address.

3. Course readings/materials:
❑ Course textbook title, ❑ author, ❑ edition/publisher.
❑ Supplementary readings (indicate whether ❑ required or ❑ recommended) and
❑ any supplies required.

4. Course description:
❑ Content of the course and how it fits into the broader curriculum;
❑ Expected proficiencies required to undertake the course, if applicable.
❑ Inclusion of catalog description is *strongly* recommended, and
❑ Description in syllabus must be consistent with catalog course description.

5. ❑ Course Goals (general), and (see #6)

6. ❑ Student Learning Outcomes (more specific)

7. Instructional methods:
❑ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:
❑ A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:
❑ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:
❑ Specify how students will be evaluated, ❑ what factors will be included, ❑ their relative value, and ❑ how they will be tabulated into grades (on a curve, absolute scores, etc.) ❑ Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for "C":
http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf

11. Support Services:
❑ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been **updated.** http://www.uaf.edu/disability/ The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials.

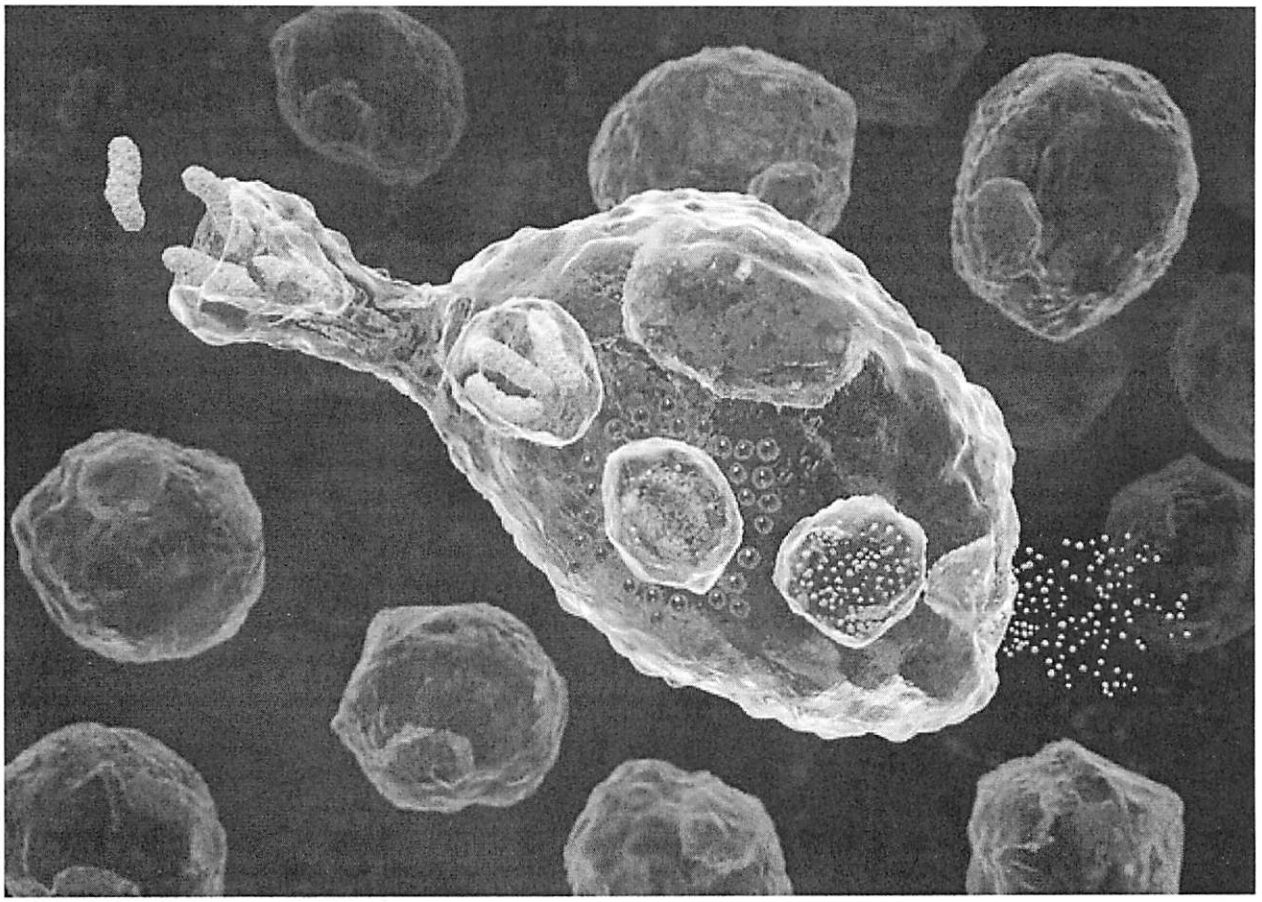
❑ State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655)to provide reasonable accommodation to students with disabilities.

IMMUNOLOGY
DVM 606 (3 units); CRN XXXXX

COURSE SYLLABUS

Andrea Ferrante, M.D.
University of Alaska Fairbanks
Fall Semester 2015

Classes: Monday/Wednesday/Friday 01:00 – 02:00, Murie 105



Course Information
Advanced Immunology, DVM 606 (3); CRN XXXXX
Meeting Times: M/W/F 01:00 – 02:00 p.m.
Meeting Location: Murie 105
Prerequisites: Acceptance into Professional Veterinary Program; or permission of instructor.
Cross-listed and stacked with BIOL F465. (3+0)

Instructor
Andrea Ferrante, M.D., Assistant Professor of Immunology
Office: Murie Building, 223A
Laboratory: Murie Building, 218
Phone: 474-5916 (office)
E-mail: aferrante@alaska.edu
Mailbox: Irving I Room 211
Office hours: Tuesdays 02:30 - 04:30 p.m. or by appointment

Course Readings/Materials
Textbooks *(One of the following):*
- Murphy, K. Janeway's Immunobiology (8th Ed.) Garland Publishing, New York, 2011.
- Parham, P. The Immune System (3rd Ed.) Garland Publishing, New York, 2009.

Suggested optional readings:
- Day, M. Veterinary Immunology: Principles and Practice (2nd Ed.), CRC Press, Boca Raton, 2011.
- Tizard, I. Veterinary Immunology (9th Ed.), Elsevier Health Science, 2012

Blackboard Page: Information from the lecture will be provided on UAF's Blackboard system following the lecture as PowerPoint lecture slide handouts, notes and possibly podcast (audio only). These tools do not serve as a replacement for attendance at lecture.
For access, go to https://classes.uaf.edu/webapps/login/ ad log in using your UAF ID and password. If you are using Blackboard for the first time, click on the first-time users for information. All course handouts will be posted here. Contact me by email (aferrante@alaska.edu) if you are unable to access this site.

E-mail Notifications: On occasion, students will be contacted via email. I will assume that each student will check his or her university-assigned email address on a regular basis (at least daily).

Journals in Immunology: Cell, Nature, Science, Immunity, Nature Immunology, The Journal of Immunology, Proceedings of the National Academy of Science, Veterinary Immunology and Immunopathology, Comparative Immunology, Microbiology and Infectious Diseases.

Course Goals	Student Learning Outcomes
To acquire a level of knowledge and understanding of the basic principles and mechanisms of immunology: The purpose of the Veterinary Immunology course is to provide a basic	1) Describe the components of the immune system; 2) Describe innate mechanisms of immune protection as well as explain how the diversity

knowledge of the immune response and involvement of immunity in health and disease. The immune system is a highly complex and interactive system evolved to provide self-defense against pathogens. Immunology is the study of the biological basis and mechanisms that govern host defense against infection. The course is designed as the first encounter with immunology for students that have enrolled in the Veterinary Medicine curriculum. It will cover the fundamental facts and principles of immunology in correlation with veterinary practice.	of immune response is generated 3) Describe antigen recognition and processing for immune presentation; 4) Describe the basis for interaction of innate and adaptive immunity; 5) Differentiate the functions of T and B cell subsets;
To correlate theoretical immunological notions to "real-life" veterinary practice:	1) Explain the molecular and cellular basis for generating an immune response that is specific and different for different infections; 2) Explain how immune-mediated mechanisms may result in disease (atopy, hypersensitivity and self-immunity); 3) Explain the importance of the immune system in cancer; 4) Describe acquired and congenital immune-deficiency states; 5) Describe the theoretical basis of vaccination and their practical applications. 6) Acquire a working knowledge of experimental and diagnostic techniques used to assess immune function.
To enhance your awareness of the impact of immunology on science and society: The immune system plays a crucial role not only in fighting infectious pathogens, but also in other disease states, including cancer, as well as systemic and organ-specific autoimmune conditions. It is one of the most utilized systems for discovering the pathways/mechanisms that govern development in biological systems. The study of immunology has been both a source of important discoveries for many fields of biology, medicine, and public health, and a reservoir for the design/generation of exquisitely specific reagents that are of ever-increasing importance in diagnostics, research and therapeutics. The development of vaccines against common infectious diseases, which began in the nineteenth century, has substantially increased life expectancy, also in the veterinary field. Thus, immunology is a field of continuously expanding importance, scientifically, economically and socially. Research in immunology has led to the discovery of unique molecular processes, such as gene rearrangement and variation, for which many Nobel prizes have been awarded	1) Critically read and evaluate peer-reviewed articles from the primary literature 2) Improve writing and oral presentation skills

Policies

Grading

Grades will be based on the percentage of total points earned out of the total possible points based on the scale below. **I will not grade "on a curve" for individual exams.**

Missed assignments and exams: times for assignments and exams will be designated well in advance. Completion of assignments and exams at the designated time will be the responsibility of the student. Accommodations will only be made for legitimate and documented contingencies that are determined by the instructor. If you have a conflict with exam dates, please come talk to me immediately at the beginning of the semester.

Grades will be calculated on 100-point scale		
A+	98-100	%
A	94-97.9	%
A-	90-93.9	%
B+	87-89.9	%
B	83-86.9	%
B-	80-82.9	%
C+	77-79.9	%
C+	70-76.9	%
D	65-69.9	%
F	<65	%

The point breakdown for this course is approximately as follows:

Component	Points	% of Grade
Lecture attendance/participation	80	8
Article discussion	80	8
Homework (6 at 15 pts./each)	90	9
One-hour test (4 at 75 pts./each)	300	30
Group assignment	100	10
Two-hour final written test	150	15
Oral exam	200	20
Total	**1000**	**100**

Lectures

Active attendance of lecture is expected. Exams will be primarily based on material covered in lecture. Furthermore, announcements of upcoming exams, assignments, or any changes to the class schedule will be made at the beginning of class, and every student is responsible for that information. During some lectures, I will be doing educational activities that will count for points (research article discussion). I will make a **subjective** assessment of each student's class participation, and assign a grade (8% of the final grade) during final evaluation. Tardiness, absenteeism, inattentiveness and unfamiliarity with course material will all negatively impact this

subjective, yet important, assessment. If you know that you will miss a lecture due to an excused absence (e.g. you are participating in a UAF sanctioned event, you become ill, you are participating in a military-required activity) you must inform me of the absence ahead of time in order for the points to possibly be excused for that lecture. Of course these will not negatively impact the subjective assessment of class participation.

Exams

You are expected to take all exams at the scheduled time. Check the exam schedule carefully and plan your appointments and travel around the course schedule. Exams will contain various types of questions, including multiple choice, matching, fill in the blank and short answer. **The final exam (written and oral) will be cumulative.**

- *Scheduled absences:* for absences caused by a conflict with a University-sanctioned activity (for example, participation in a competition with a UAF athlete), you must notify us in advance of the exam. You will be expected to take the exam before your absence. Other types of scheduled absences are generally **not** accepted: you are expected to schedule around exams. In particular, make sure that your schedule your flight home or vacation for **after** finals. I will **not** grant requests for early final exams.
- *Unscheduled (emergency) absences:* if an emergency arises the day of the exam that makes you unable to attend the exam, you must inform me **before** the start of the exam by e-mail or phone (leave a message if you cannot reach me). If the nature of the emergency makes it impossible for you to contact me in advance, contact me as soon as possible afterwards. You must schedule a take-up exam within 48 hours of the scheduled exam. It is your responsibility to schedule the make-up. If not taken within 48 hours, the exam will be recorded as a zero. You should expect to provide documentation of emergency. Make-up exams are **not** guaranteed. They are granted at the instructor's discretion.

Homework

Homework will be posted on Blackboard on Monday afternoon by 5 p.m. It is due the following Monday by 11:59 p.m. No late assignments will be accepted, as indicated in the following paragraph. The homework assignments will be designed to help you review important topics and to connect theoretical aspects of immunobiology to aspects of "real life" clinical veterinary immunology. For each homework a short paper will be assigned, in which students are invited to analyze a clinical case and comment on the mechanisms responsible for disease development. The guidelines (including topic and formatting) and point breakdown will be indicated separately for each homework.

Late work

Late work is not accepted. Any work turned in after due time (11:59 p.m. of the following Monday since homework was posted) will be recorded as a zero. You should submit your homework via mail or upload into Blackboard by the due time. Extensions on work are granted only under extenuating circumstances and must be obtained in advance from the instructor.

Journal Club

Journal clubs are educational interventions that can improve reading habits, knowledge of basic and translational research, and help contextualize what is discussed during lectures. The articles will include, but will not be limited to, topics of veterinary interest

During the course of the program, each of you will be asked to lead the discussion of an article proposed by the instructor. This experience fulfills several goals of the study curriculum such that, at its conclusion, each student will be able to:

- Conduct structured critical appraisal of the literature
- Recognize and understand basic study design.

- Gain familiarity with immunological approaches, including basic biophysical and biochemical methods or computational models.
- Gain insight into a specific mechanistic problem at the structural or molecular level, and how this relates to the system in its entirety
- Hone skills related to oral presentations

Expectations

Presenting student: all of you will be suggested an article to read one week before the day of presentation. One of you, paired with an undergraduate student from BIOL F465, will be volunteering to lead the discussion. Keep in mind that you are primarily responsible for preparing and animating the presentation and your colleague from BIOL F465 will be assisting you. Please, let me know if you want me to organize a calendar, or you would rather discuss and agree on days that work for each one of you, and inform me accordingly.

Responsibilities: Once you have read and reviewed the article, each one of you should have a general understanding of the main question asked by the specific study, how it was addressed, and what conclusions the authors can draw from the results. You should have a list of questions to ask during the discussion.

The student who is leading the discussion will develop a power point presentation and produce a final critique (oral). Everyone is welcome to stop by my office before the paper is presented to talk about it. The presenting student is strongly encouraged to do so one or two days in advance by appointment or on Tuesday afternoon.

Process: as you go through the paper, you should approach it critically, trying to ask the following question and seeking for answers:

- Issues addressed by the article—What is the research question? Why does it matter? How does it fit with what already is known? How can it help solve important problems?
- Design of the study and methods—Is the study design appropriate for the question and what already is known about the question? What kinds of methods are used?
- How information was interpreted?
- Main findings—Does this study advance current knowledge, is the main question(s) finding an answer?
- How transportable are the findings to other settings or systems?
- Implications—How can the information be used at the translational level?
- Next steps/new questions—What are the next steps in interpreting or applying the findings? What new questions arise and how might they be best answered?

Presentation: your presentation will be done in PowerPoint and should be roughly organized as follows:

- Topic Background (state why this is important, and provide the audience with the information required to understand)
- Present the paper (make use of figures and tables from the article to explain results and methods). All the main figures should be discussed; the supplementary figures can be presented if they are adding important pieces of evidence that you think should be highlighted.
- Present your critical appraisal.
- Sum up. Derive your conclusion.
- Aim to complete your presentation within 45 minutes. Try not to consume excess time or get too over-involved in one aspect of the article.

Group Assignment – Poster Presentation

A medical science liaison is a person who acts as a bridge of communication between clinical medicine, and other areas of the healthcare industry such as pharmaceutical or medical device manufacturing. The medical science liaison is a somewhat of a spokesperson and educator, with a bit of clinician and salesperson mixed in.

In this assignment you –as an individual and as a group- will play the role of the medical-science liaison. Each group will be assigned the active principle of a compound with a known effect on the immune system adopted in the veterinary practice. Your goal will be developing an understanding of the pharmodynamics of the compound assigned to you, and based on its activity, indicating which conditions may be improved upon its administration.

The presentation will be conveyed through poster and oral discussion between 01:00 and 02:00 on Monday, December 7th. Each poster will contain an abstract (200 words max), an introduction, a description of the molecule from the chemical/physical standpoint (shape and function are correlated: a detailed description is NOT required, but enough information to understand the activity of the compound is expected), a description of the pharmacodynamics (how the molecule works?) which obviously will allow you to showcase your immunological knowledge. Finally you will propose one or more diseases where that compound may be eligible as therapeutics, whether it has been approved by FDA at the moment or not, on the basis of its mechanism of action (with proper explanation).

Considering the nature of the presentation, your group will be evaluated based on:

- Scientific content of the poster (30%)
- Scientific content of the presentation (30%)
- Clarity of both oral discussion and poster (25%)
- Esthetic aspect of the poster, use of images/cartoon, visual impact (15%)

Being a public presentation, I will also allow external audience to judge those works with grading cards, at least for the esthetic/visual component. You are invited to use all your imagination and artistic/publicist/promotional capacity to create a convincing experience. Remember: the key aspect of this assignment is to present sound scientific arguments in order to lead the veterinary to adopt your compound for the conditions you indicate as appropriate, or to support the clinical researcher who wants to use the drug for a new trial, but he/she is looking for more insights.

The poster will be prepared as a power point file. I encourage you to submit your final power point by Monday, November 30th to me, so that graphics department has enough time to print all your banners. You can resize the slide in power point to simulate the actual final size. The max size ought to be 4ft x 4ft. If you are not ready by then, I cannot guarantee that the poster will be ready by due date, but you are free to have it printed by yourself.

As soon as I have the names in your group, I will assign the compound (which means that the sooner you mail me with your names, more time you have to prepare your poster...). I expect you to be able to divide yourselves into 3 groups of 3/4 students.

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work with a partner or partners depending on the nature of the project, your contribution to a collective assignment must be your individual work, clearly indicated and acknowledged by your peers. Any instances of these or any types of academic dishonesty will result in a grade zero on the work involved (this may include all the work in the category, for example, if the academic dishonesty involves a written exam, all the written exam scores may be changed to zeros), forwarding the incident to appropriate University personnel, and may result in an F in the course and/or expulsion from the University. If you are in doubt as to whether something constitutes academic dishonesty, ask your instructor.

Plagiarism is the overt or covert use of other people's work or ideas without acknowledgement of the source. It is a type of academic dishonesty. Plagiarism includes using ideas or data from a classmate or colleague without permission and acknowledgment, including information from journal articles (either in their entirety or with minor changes) in your writing without citing the author, using sentences from published sources without quoting them, or copying parts of a website into your essay. **You cannot use someone's ideas without citing the originator; you cannot use someone's words without quoting the writer. Any deviation from this will be regarded as plagiarism.** When you plagiarize you are stealing the currency that science (and many other endeavors) uses: knowledge.

A few simple rules to prevent plagiarism:

1. When in doubt about whether you should cite or acknowledge someone, do so.
2. If you are unsure of how to cite someone's writings or ideas, ask one of the instructors for help. Reference librarians are also good source of information for help with citations.

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All students, including those with disabilities, are welcome in this course, and I am committed to providing equal access to this course for all students. If you have a disability (including learning disabilities) please inform me during the first week of class so that I can accommodate your specific needs. If you have not already done so, you will also need to contact UAF's Office of Disabilities Services (474-5655). Everyone should have the opportunity to participate fully in the course and to complete assignments and exams to the best of their ability. If accommodations are needed to enable you to do so, I will gladly work with you to provide them.

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- If you have any question during lecture, ask! Don't let me plow on ahead if you are lost.
- Talk to me after lecture or during office hours, or make an appointment to talk to me.
- Talk to a classmate. Setting up study groups can be very helpful.
- If it is a brief question, e-mail me.

Ask for help right away! I am happy to answer your questions and help you succeed.

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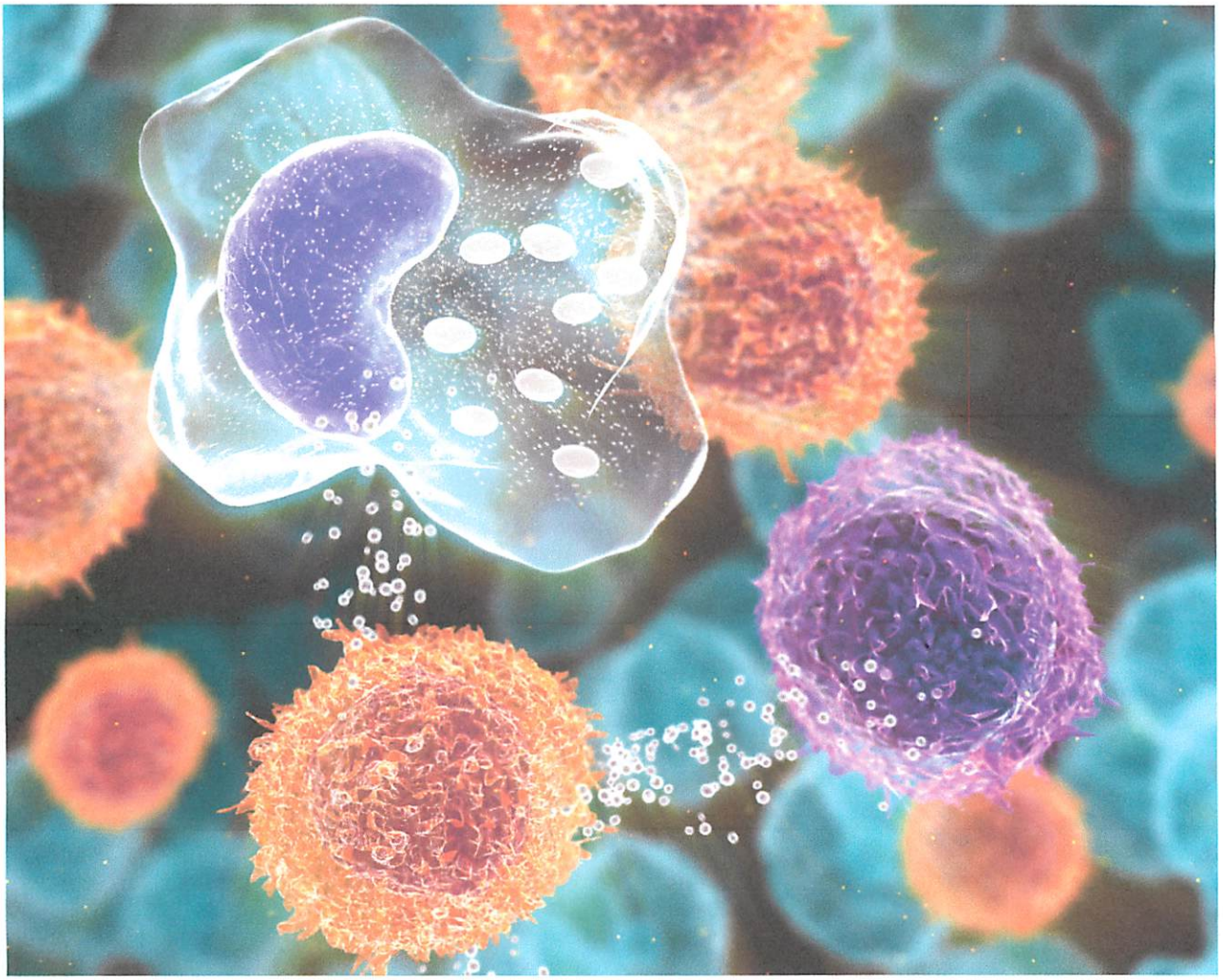
1	F	09/04	Medical Importance of the Immune System	
2	M	09/07	Cells and Organs of the Immune System	
	W	09/09	Innate Immunity/Inflammation	
	F	09/11	Immunogens & Antigens	
3	M	09/14	Antibody Structure and Function I	
	W	09/16	Antibody Structure and Function II	
	F	09/18	**Journal Club**	
4	M	09/21	Complement	**HW1 due**
	W	09/23	**Exam 1**	
	F	09/25	**Journal Club**	
5	M	09/28	Genetic Basis of Ab Structure	
	W	09/30	Role of MHC in the Immune Response	
	F	10/02	**Journal Club**	
6	M	10/05	The T Cell Receptor: Structure and Genetic Basis	**HW2 due**
	W	10/07	Adaptive Immune Response: Activation of T and B Cells	
	F	10/09	**Journal Club**	
7	M	10/12	Cytotoxic Cell Mediated Immunity	
	W	10/14	**Exam 2**	
	F	10/16	**Journal Club**	
8	M	10/19	Antigen-Antibody Interactions	**HW3 due**
	W	10/21	Antibody-Mediated Reactions	
	F	10/23	**Journal Club**	
9	M	10/26	Cell-Mediated Reactions	
	W	10/28	Immunology of HIV Infection	
	F	10/30	**Journal Club**	
10	M	11/02	Infection and Immunity	**HW4 due**
	W	11/04	Immune Regulation & Tolerance	
	F	11/06	**Journal Club**	
11	M	11/09	**Exam 3**	
	W	11/11	Cancer Immunology	
	F	11/13	**Journal Club**	
12	M	11/16	Autoimmunity	**HW5 due**
	W	11/18	Transplantation	
	F	11/20	**Journal Club**	
13	M	11/23	Disorders of the Immune Response	
	W	11/25	Immunoprophylaxis (Vaccines) & Immunotherapy	
	F	*11/27*	*Thanksgiving break*	
14	M	11/30	Comparative immunology (focus on non-mammalian species)	**HW6 due**
	W	12/02	**Journal Club**	
	F	12/04	**Exam 4**	
15	M	12/07	**Poster presentation**	
	W	12/09	**Final Exam (Oral)**	
	F	12/11	**Final Exam (Oral)**	
16	M	12/14	**Final Exam (Written)**	

IMMUNOLOGY
BIOL 465 (3 units); CRN XXXXX

COURSE SYLLABUS

Andrea Ferrante, M.D.
University of Alaska Fairbanks
Spring Semester 2015

Classes: Monday/Wednesday/Friday 01:00 – 02:00, Murie 105



Course Information

- Immunology, BIOL 465 (3); CRN 34617
- Meeting Times: Monday/Wednesday/Friday 01:00 – 02:00, Murie 105
- Prerequisites: BIOL 115X; 116X and 310; or BIOL F213X and BIOL F214X; or permission of instructor. *Cross-listed and stacked with DVM 606. (3+0)*
- Recommended: BIOL F260 (Genetics) and BIOL 342 (Microbiology) or co-enrollment.

Instructor

Andrea Ferrante, M.D., Assistant Professor of Immunology
Office: Murie 223A
Laboratory: Murie 218
Phone: 474-5916 (office)
E-mail: aferrante@alaska.edu
Mailbox: Irving I Room 211
Office hours: Tuesday 02:30 – 04:30 pm or by appointment

Course Readings/Materials

Textbooks:

- Geha, R. S. and Notarangelo, L. Case Studies in Immunology: A Clinical Companion. (6th Ed.) Garland Publishing, New York, 2012.
  And one of the following:
- Murphy, K. Janeway's Immunobiology (8th Ed.) Garland Publishing, New York, 2011.
- Parham, P. The Immune System (3rd Ed.) Garland Publishing, New York, 2009.

Suggested texts available:

- Kindt, T.J., Goldsby, R.A., Osborne, B.A. Kuby Immunology, VI Ed., W.H. Freeman and Company, New York, 2007.
- Abbas, A.K., Lichtman, A.H., Pillai, S. Cellular and molecular immunology, 7th ed. Elsevier/Saunders, 2012.
- Abbas, A.K., Lichtman, A.H. Basic immunology: functions and disorders of the immune system. 3rd ed. Saunders/Elsevier, 2009.

Blackboard Page: Information from the lecture will be provided on UAF's Blackboard system following the lecture as PowerPoint lecture slides and PDF lecture notes. These tools do not serve as a replacement for attendance at lecture.
To log into it, go to https://classes.uaf.edu/webapps/login/ ad log in using your UAF ID and password. If you are using Blackboard for the first time, click on the first-time users for information. All course handouts will be posted here. Contact me by email if you are unable to access this site.

E-mail Notifications: On occasion, students will be contacted via email. I will assume that each student will check his or her university-assigned email address on a regular basis.

Journals in Immunology: Cell, Nature, Science, Immunity, Nature Immunology, The Journal of Immunology, Journal of Experimental Medicine, Proceedings of the National Academy of Science.

Course Goals and Student Learning Outcomes

- **Goal 1: To acquire a level of knowledge and understanding of the basic principles and mechanisms of immunology**. The purpose of the Immunology course is to provide a basic

knowledge of the immune response and involvement of immunity in health and disease. The immune system is a highly complex and interactive system evolved to provide self-defense against pathogens. Immunology is the study of the biological basis and mechanisms that govern host defense against infection. The course is designed as the first encounter with immunology for students that have taken introductory biology course. It will cover the fundamental facts and principles of immunology.
Student Learning Outcome 1: By the time that the student has finished the course, he/she should have an understanding of the components of the immune system, he/she should be able to describe innate mechanisms of immune protection as well as explain how the diversity of immune response is generated. The student should be able to describe antigen recognition and processing for immune presentation, understand the basis for interaction of innate and adaptive immunity, he/she should know how to differentiate the functions of T and B cell subsets.

- **Goal 2: To acquire an understanding of the basic immunological mechanisms responsible for pathological states.** The immune system plays a crucial role not only in fighting infectious pathogens, but also in other disease states, including cancer, as well as systemic and organ-specific autoimmune conditions, such as lupus, rheumatoid arthritis, scleroderma and diabetes. Allergy, atopy and hypersensitivity are well-known pathological states that afflict a large fraction of the population, and similarly immunodeficient states, both congenital and acquired, constitute serious, life-threatening conditions.
Student Learning Outcome 2: By the end of the course, each student is expected to be able to explain the molecular and cellular basis for generating an immune response that is specific and different for different infections; explain how immune-mediated mechanisms may result in disease (atopy, hypersensitivity and self-immunity); explain the importance of the immune system in cancer; describe acquired and congenital immune-deficiency states; describe the theoretical basis of vaccination and their practical applications.

- **Goal 3: To enhance your awareness of the impact of immunology on science and society.** The study of immunology has been both a source of important discoveries for many fields of biology, medicine, and public health, and a reservoir for the design/generation of exquisitely specific reagents that are of ever-increasing importance in diagnostics, research and therapeutics. The development of vaccines against common infectious diseases, which began in the nineteenth century, has substantially increased life expectancy, particularly in those regions of the world where vaccines are available. On the other hand, the emergence of human immunodeficiency virus and the resulting failure of the immune system in AIDS threaten to decimate populations, particularly in the developing world. Thus, immunology is a field of continuously expanding importance, scientifically, economically and socially. Research in immunology has led to the discovery of unique molecular processes, such as gene rearrangement and variation, for which many Nobel prizes have been awarded including those to Emil von Behring (recipient of the first Nobel Prize for Physiology or Medicine), Karl Landsteiner, Gerald Edelman, Cesar Milstein, Sosumu Tonegawa, Niels Jerne, Baruji Benaceraff, Jean Dausset, Rolf Zinkernagel, Peter Doherty, Ralph Staiman, Jules Hoffman and Bruce Beutler.
Student Learning Outcome 3: By the end of the course the student will able to critically read and evaluate papers from the primary immunological literature as the principle vehicle to learn about progressions in immunology and how these impact science and society.

Policies

Grading
Grades will be based on the percentage of total points earned out of the total possible points based on the scale below. You will notice that the cut-off point for A- is not 90% but 88%. The comparable is true for the B-, C- and D- cutoffs. The reason for this is that under the plus/minus grade system, a C earns 2.0 in terms of GPA calculation. A C- earns only 1.7 on terms of GPA calculation, and does not count as successful completion of the course. **You must earn a C or higher for the course to count.** I think that if you have earned a 70% in this course, you have earned a C and 2.0 in terms of GPA credit, so I have set up the grading scale accordingly.
I will not grade on a curve individual exams.

Missed assignments and exams: times for assignments and exams will be designated well in advance. Completion of assignments and exams at the designated time will be the responsibility of the student. Accommodations will only be made for legitimate and documented contingencies. If you have a conflict with exam dates, please come talk to me at the beginning of the semester.

Grade	% of Total Points
A+	97-100
A	90-96
A-	88-89
B+	86-87
B	80-85
B-	78-79
C+	76-77
C	70-75
C-	68-69
D+	66-67
D	60-65
D-	58-59
F	0-57

The point breakdown for this course is approximately as follows:

Component	Points	% of Grade
Lecture attendance/participation	90	9
Article discussion	90	9
Homework (6 at 20 pts./each)	120	12
One-hour test (4 at 75 pts./each)	300	30
Two-hour final written test	200	20
Oral exam	200	20
Total	**1000**	**100**

Lectures

Active attendance of lecture is expected. Exams will be primarily based on material covered in lecture. Furthermore, announcements of upcoming exams, assignments, or any changes to the class schedule will be made at the beginning of class, and every student is responsible for that information. During some lectures, I will be doing educational activities that will count for points (research article discussion). I will make a **subjective** assessment of each student's class participation, and assign a grade (8% of the final grade) during final evaluation. Tardiness, absenteeism, inattentiveness and unfamiliarity with course material will all negatively impact this subjective assessment. If you know that you will miss a lecture due to an excused absence (e.g. you are participating in a UAF sanctioned event, you become ill, you are participating in a military-required activity) you must inform me of the absence ahead of time in order for the points to be excused for that lecture. Of course these will not negatively impact the subjective assessment of class participation.

Exams

You are expected to take all exams at the scheduled time. Check the exam schedule carefully and plan your appointments and travel around the course schedule. Exams will contain various types of questions, including multiple choice, matching, fill in the blank and short answer. **The final exam (written and oral) will be cumulative.**

- *Scheduled absences:* for absences caused by a conflict with a University-sanctioned activity (for example, participation in a competition with a UAF athlete), you must notify us in advance of the exam. You will be expected to take the exam before your absence. Other types of scheduled absences are generally **not** accepted: you are expected to schedule around exams. In particular, make sure that your schedule your flight home or vacation for **after** finals. I will **not** grant requests for early final exams.
- *Unscheduled (emergency) absences:* if an emergency arises the day of the exam that makes you unable to attend the exam, you must inform me **before** the start of the exam by e-mail or phone (leave a message if you cannot reach me). If the nature of the emergency makes it impossible for you to contact me in advance, contact me as soon as possible afterwards. You must a take-up exam within 48 hours of the scheduled exam. It is your responsibility to schedule the make-up. If not taken within 48 hours, the exam will be recorded as a zero. You should expect to provide documentation of emergency. Make-up exams are **not** guaranteed. They are granted at the instructor's discretion.

Homework

Homework will be posted on Blackboard on Friday afternoon by 5 p.m. It is due the following Wednesday by 11:59 p.m. No late assignments will be accepted, as indicated in the following paragraph. The homework assignments will be designed to help you review important topics and to connect theoretical aspects of basic immunology to aspects of "real life" clinical immunology. Homework is open-note and open-book. I strongly encourage you to use the homework as study tool. Try to figure out the answer without looking at your book or notes. Then, before you submit your answer, check it yourself using your book, notes and the hints that are included in the assignment. Once you are confident it is correct, submit the answer. If you were incorrect, try to figure out why before you answer again. The work that you submit must be the product of your own understanding and be your own work.

Late work

Late work is not accepted. Any work turned in after due time will be recorded as a zero. Work will be collected at the beginning of the period in which is due. If you miss class on a day work is due, you must turn it in prior to the start of that class. Submitting work via e-mail is acceptable in most cases, so long as the e-mail is sent prior to the start of class and contains all of the work that is due. Extensions on work are granted only under extenuating circumstances and must be obtained in advance from the instructor.

Journal Club

Journal clubs are educational interventions that can improve reading habits, knowledge of basic and translational research, and help contextualize what is discussed during lectures. The articles will include, but will not be limited to, topics of veterinary interest

During the course of the program, each of you will be paired with a student from DVM F606 and will assist him/her in leading the discussion of an article proposed by the instructor. This experience fulfills several goals of the study curriculum such that, at its conclusion, each student will be able to:

- Conduct structured critical appraisal of the literature
- Recognize and understand basic study design.
- Gain familiarity with basic immunological approaches, including biochemical and biophysical methods, or computational models.
- Gain insight into a specific mechanistic problem at the structural, molecular level, and cellular level and how this relates to the system in its entirety
- Hone skills related to oral presentations

Expectations

Presenting student: All of you will be suggested an article to read one week before the day of presentation. One of you, paired with a student from DVM F606, will assist in leading the discussion. Please, let me know if you want me to organize a calendar, or you would rather discuss and agree on days that work for each one of you, and inform me accordingly.

Responsibilities: Once you have read and reviewed the article, each one of you should have a general understanding of the main question asked by the specific study, how it was addressed, and what conclusions the authors can draw from the results. You should have a list of questions to ask during the discussion.

The student from DVM F606 is primarily responsible for leading the discussion and will develop a power point presentation and produce a final critique (oral). As undergraduate student, you are responsible for knowing the article, being acquainted with your colleague's slides, of which content you have both agreed on, and on the modality of the presentation. You should also be able to attempt to address other students' questions. Everyone is welcome to stop by my office before the paper is presented to talk about it. The presenting student is strongly encouraged to do so one or two days in advance by appointment or on Tuesday afternoon.

Process: As you go through the paper, whether you are up for presentation or not, you should approach it critically, trying to ask the following question and seeking for answers:

- Issues addressed by the article—What is the research question? Why does it matter? How does it fit with what already is known? How can it help solve important problems?
- Design of the study and methods—Is the study design appropriate for the question and what already is known about the question? What kinds of methods are used?
- How information was interpreted?
- Main findings—Does this study advance current knowledge, is the main question(s) finding an answer?
- How transportable are the findings to other settings or systems?
- Implications—How can the information be used at the translational level?
- Next steps/new questions—What are the next steps in interpreting or applying the findings? What new questions arise and how might they be best answered?

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