DISCLAIMER: This is an example syllabus that is subject to change at faculty discretion.

DOANE UNIVERSITY

Course Syllabus

Course Information
COURSE PREFIX: BIO-344
COURSE TITLE: Immunology for Health Professionals
CREDIT HOURS: 3 Credit Hours

Preliminary Class Plan and Topics
Please see the schedule provided in the course.

Instructor Information :

Response Time
If you need to contact me directly, my preference is that you will text or call me. Phone calls or text messages can be responded to immediately. If you email me your concerns, please allow at least 24 hours for me to respond to emails Monday-Friday and 48 hours on the weekend.

Technology Help
If you have a question about the technology being used in the course, please contact the Doane University Help Desk help@doane.edu for assistance (contact information is listed below).

Course Catalog Description
This course will explore the human immune system and its relationship to human health and disease. Students will demonstrate an understanding of the anatomy and development of the various components of the immune system, the mechanisms of innate and acquired immunity, the development of vaccines to modulate immune function, and the disease states that can

Module	Topic	Assessments & Activities	Aligned Objectives
1	Overview of the Immune System	• Module 1-Review Quiz Assignment • Immune System Flowchart Assessment • Analogies Assessment • Pattern Recognition Assessment • Summary of Adaptive Immune System	1. Describe the interrelationship between the components of innate and acquired immunity 2. Identify the primary and secondary lymphoid organs 3. Describe physical and chemical barriers of the innate immune system 4. Characterize pattern recognition
2	Development of the Immune System	• Module 2- Word Matching Activity Assignment • Antibody Prototype Assessment • Superhero Profile of Key Immune Cell Assessment • Mini-Essay on Role of MHC Complex Assessment • Developmental Pathways Assessment	1. Describe the origin, differential developmental pathways of the cells of the immune system cells. 2. Identify the cells and organs of the Adaptive Immune System. 3. Describe the HMC role in antigen presentation 4. Describe the development of a B lymphocyte. 5. Describe T-cell differentiation in the thymus.
3	B and T Cells	• Writing Test Questions Assignment • Resume of Immunoglobulins Assessment • Case Study Assessment • Mini-Essay on Bruton Agammaglobulinemia Assessment	1. Identify the different classes of immunoglobulins. 2. Define the biological properties of the different immunoglobulins. 3. Explain B and T cell receptors and signaling. 4. Describe B-cell Activation, Differentiation, and Memory. 5. Describe T-cell Activation, Differentiation, and Memory.
4	Inflammation	• Module 4- Review Quiz Assignment • True or False with Explanation Assessment • Concept Map of Complement Systems Assessment • Inflammatory Story to Grandma Assessment	1. Describe the cell types involved in inflammation. 2. Define chemical mediators involved in inflammation, including cytokines, and chemokines. 3. Identify the hallmark signs of inflammation. 4. Distinguish between local and systemic mediators of inflammation. 5. Define the different complement pathways.

			6. List the components of the complement pathways. 7. Describe the biological activities of the complement.
5	Generation of Diversity	• Module 5- Review Quiz Assignment • MHC and Immunoglobulin Diversity Discussion Assessment • Case Study Assessment • Mini-Essay on Vaccines Assessment	1. Describe the organization and rearrangement of the immunoglobulin genes. 2. Characterize the steps in generation of antibody diversity. 3. Explain immunogenicity, types of immune responses and immunity. 4. Characterize immunization and principles of vaccination. 5. Identify the genes of the HLA region. 6. Describe the inheritance and regulation of expression of the MHC genes.
6	Failure of the Immune System	• Module 6- Review Quiz Assignment • Types of Immunodeficiencies Discussion Assessment • HIV/AIDS Infographic Assessments • Mini-Essay on Systemic Lupus Erythematosus Assessment	1. Describe B-cell and T-cell development. 2. Explain Central and Peripheral Tolerance 3. Explain how central and peripheral tolerance functions to prevent autoimmunity and how mutations, infections, or changes in the availability of self-antigen can break tolerance. 4. Define the different classes of immunodeficiency diseases and provide examples. 5. Explain the events of the HIV infection.
7	Hypersensitivity Reactions	• Hypersensitivity Word Matching Assignment • Science in the News – Gluten Assignment • Four Classes of Hypersensitivity Graphic Organizer Assessment	1. Explain the classifications of the Four Main classes of Hypersensitivity Reactions 2. Understand how normal T cell and B cell antigen recognition, signaling, and effector functions contribute to hypersensitivity.

		• Investigation Paper – Food Allergies in Schools Assessment	3. Describe the mechanism for Type I hypersensitivity, pathogenesis and recall the steps and signals involved in generating a Type I Hypersensitivity Reaction. 4. Review the central role played by mast cells in allergic disease, including their activation by cell bound IgE, release of pro-inflammatory mediators, and recruitment of additional immune cells. 5. Describe how eosinophils and basophils amplify the inflammatory cascade. 6. Distinguish between the characteristics of the immediate and late phase reactions and between the development of a local reaction versus a systemic effect. 7. Describe the mechanism for Type II Hypersensitivity Reactions, the pathogenesis and give examples
8	Applied Immunology	• Module 8- Review Quiz Assignment • HHMI Virtual Lab Assessment • Analysis of the Home Pregnancy Test Assessment • Video on Flow cytometry Assessment • Mini-Essay on Cellular Assays Assessment	1. Explain Antigen-Antibody Interactions. 2. Describe the principles that are the foundation of immunoassays, listing examples of them. 3. Explain what a flow cytometer does and how it functions. 4. Describe why the output of a flow cytometer is useful for immunology research.

result when the immune system fails. Students in this course will demonstrate knowledge about the basic experimental methods used to evaluate immune system function.

Course Prerequisites

For successful completion of this course, it is recommended that students have completed 6 hours of Biology and 3 hours of college-level General Chemistry

Course Textbook and Materials

In addition to the textbooks listed below, you must have access to the internet.

Required
Immunology: A Short Course, 7th edition, by Richard Coico ISBN-13: 978-1118396919 ISBN-10: 111839691X

Required Technology
*Course books and reading materials will be integrated into your Canvas portal

Computer

Stable internet connection

Learning Objectives
At the completion of this course students will be able to:

1. Compare and contrast structure and function and different roles of the innate and adaptive (acquired) immune system.
2. Describe the anatomy and development of the various components of the immune system.
3. Characterize the key cells and markers of an inflammatory response.
4. Describe the MHC 1 and II genes, and proteins.
5. Describe the structure, function, and characteristics of immunoglobulin classes.
6. Characterize the generation of B cell and T cell responses.
7. List and describe the major components in complement pathway, along with their functions.
8. Analyze the failures of the immune system, and their resulting pathologies.
9. Characterize the classes of hypersensitivity reactions.
10. Explain the fundamental principles behind laboratory and diagnostic techniques

Course Requirements

Online Course
This is an online course and there will not be any face-to-face class sessions. All communications, submissions of assignments, course interactions, and posting of grades will utilize Canvas LMS (https://doane.instructure.com). You must have a reliable internet connection throughout the duration of the course. Lack of internet access will not earn you extensions on assignments.

Attendance/Participation
Attendance in an online course means logging into Canvas daily, during the duration of the course, and participating in all of the activities that are posted in the course. In addition, check your Doane University email account regularly, as I may send important information about the course.

Doane University expects active participation by a student in a course, whether the course is on-ground or online. A student is expected to be prompt and regularly attend on-ground classes in their entirety. Regular engagement is expected for online courses.

You are required to have an active Doane University e-mail account. All communication from the instructor will be to your Doane University e-mail account, via canvas messaging (accessed at doane.instructure.com), or through course announcements. Please check your Doane University e-mail account and the course announcements daily.

Discussion Board Participation
Regarding attendance/participation in Discussion Board assignments: each Discussion board has two parts. Part 1 is when you submit your portion of an assignment, and Part 2 is your peer feedback. Please note that discussion board submissions and comments posted after the due date will not count toward your grade; after the Part 2 due date the discussion board will close. This assignment is analogous to a face-to-face classroom discussion, you must be engaged or "in attendance" to conduct a discussion with your peers. The discussion assignments cannot be accepted retroactively.

Class Preparation
Preparation for class means reading the assigned readings and reviewing all information required for that week. Preparation for class means reading the assigned readings and reviewing all information required for that week. You should plan to work on this course every day. This is a condensed, fast-paced, course. Expect to spend approximately 20 hours a week preparing for and actively participating in this 8-week course. We strongly advise that you do not take any vacations during the duration of the course.

Netiquette Guidelines
At heart, Netiquette (etiquette for the Internet) is simple, good manners and business courtesy. Some of it may seem basic, but some infringements can result in major problems for others or can create an unintended insult to another user. The guidelines are adapted from The Core Rules of Netiquette by Virginia Shea (1994). For more information, please review the Netiquette Guidelines in the Student Resource Center.

Computer Requirements
For the successful use of Canvas please refer to Doane University's minimum computer requirements. This also includes:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Word processing software—Microsoft Word or Google Docs
- Webcam and mic

For privacy purposes, use of a webcam is only optional during video conferencing and recording.

You are expected to have a reliable computer and internet connection throughout the course. You are also required to have a computer with a camera and/access to a camera that will enable you to do video assignments.

Campus Network or Canvas Outage
When access to Canvas is not available for an extended period of time (greater than one entire evening - 6pm till 11pm) you can reasonably expect that the due date for assignments will be changed to the next day (assignment still due by midnight).

Drop and Add Dates
If you feel it is necessary to withdraw from the course, please contact your University Advisor or the Open Learning Academy at ola@doane.edu or (402) 467-9008 for full details on the types of withdrawals that are available and their procedures. You can also review important refund and withdrawal dates via the Academic Calendar for OPENING LEARNING ACADEMY.

Academic Integrity
Fundamental to our mission, our core values, and our reputation, Doane University adheres to high academic standards. Academic integrity is essential to maintaining the credibility and value of educational achievements. All assignments must reflect the student's own work, and any sources used should be properly cited to give credit 4 to the original authors. To ensure fairness, assignments will be randomly selected for checks to detect AI usage and plagiarism. This includes using tools like Grammarly or similar programs to "clean up" your work, which are still considered AI-assisted and will trigger AI detectors. Such tools should not be used to manipulate or alter the originality of your assignments. Failure to adhere to academic integrity standards could result in severe consequences, so it is vital to complete your work independently and without AI assistance. Don't risk it—always do your own work and cite your sources. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity. Disciplinary actions may be taken against students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs.
http://catalog.doane.edu/content.php?catoid=18&navoid=1448#Academic_Dishonesty

Course Grading
Submitting Assignments
All assignments, unless otherwise announced by the instructor, must be submitted via Canvas. Each assignment will have a designated place to submit the assignment. It is your responsibility to submit all the assignments in accordance with the format instructed in the prompt. All material, assignments, and deadlines are subject to change with prior notice. It is your

responsibility to stay in touch with your instructor and review the course site regularly to learn about changes to assignments or due dates. Once the course ends no more assignments will be accepted. **All assignments and due dates are reflective of Central Standard Time.**

Grading Scale
Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

- A+ 97-100
- A 93-96
- A- 90-92
- B+ 87-89
- B 83-86
- B- 80-82
- C+ 77-79
- C 73-76
- C- 70-72
- D+ 67-69
- D 63-66
- D- 60-62
- F <60

Grading Scheme
Your final percentage will be assessed with the following criteria:
Review Assignments - 20%
Higher Order Assessments -30%
General Assessments - 25%
Case Studies - 15%
Miscellaneous - 10%
TOTAL 100%

The assignments are weighted so the final grades will not be rounded up to the next grade.

Late or Missed Assignments
All assignments must be completed by the due date and turned in to finish the course. Unless you discuss a late assignment with your instructor PRIOR to the assignment due date, your assignment will lose 20% (of the designated assignment grade) each day it is late. Unapproved late assignments will not be accepted for credit, and extensions will not be applied retroactively. Assignments submitted through email will not be accepted for grading and credit. Any late or missing assignments related to an illness must be accompanied by a valid and verifiable document from your medical provider before any accommodation can be made.

Feedback

Please allow 3-7 days for feedback on assignments once all participating students have submitted a response to a specific assignment. When an assignment falls short of what is required for a full grade I provide thorough feedback, and this interval enables me to review an assignment more than once, prior to issuing a fair grade. Please review the instructor feedback for assignments and assessments, as this will help you reflect on what you have learned while receiving suggestions for improvement.

Grade Appeals
Students who believe that their grade was miscalculated due to a mathematical error should contact the instructor within ten (10) days of the grade posting. A student is encouraged to talk with their advisor to offer an assessment of the concern and to clarify the steps of the appeal process. More information is published in the Undergraduate and Graduate Catalogs.

Tutor Me
Students will have access to a free tutor me service within their Canvas account. You can connect with a live free tutor or submit a paper to get feedback before submitting.

Technical Support
If you are in need of technical assistance, please access the Self Service Portal. You may reach the help desk at 402-826-8411 or by email at help@doane.edu.

Accessibility Statement
In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accommodations & Disability Services
Doane University's Disability Services Office will provide guidance on accommodations and universal access. To request accommodations please complete the Self-Identification Form and visit the website for additional information.

Title IX Requirements: Mandatory Reporting
At Doane, all university employees, including faculty, are considered Mandatory Reporters. As a Mandatory Reporter, I am required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator and, thus, cannot guarantee confidentiality. This means that if you tell me about an incident of sexual harassment, sexual assault, domestic violence, dating violence, stalking and/or other forms of prohibited discrimination, I have to share the information with the University's Title IX Coordinator. My report does not mean that you are officially reporting the incident. This process is in place to ensure you have access to and are able to receive the support and resources you need. For additional information, including

confidential resources, please visit the Campus Advocacy, Prevention, and Education (CAPE) Project.

Anti-Harassment Policy
Doane University, referred to as the "University", is committed to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community. This policy addresses the University's responsibilities under Title IX, the Violence Against Women Reauthorization Act of 2013, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act ("Clery Act"). More information is published in the Student Handbooks.

Instructional Technology Accessibility and Privacy Policies
If your course uses additional technology tools, information on the Technology Policies & Guidelines

Syllabus Disclaimer
I (the instructor) view the course syllabus as an educational contract between myself and each student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. I reserve the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.

Syllabus Changes
The instructor and Doane University reserve the right to make changes as necessary to this course syllabus. All students will be notified of any changes.

Doane Syllabus Addendum
Each student is responsible for being aware of the policies, resources, and expectations as specified in the Doane Syllabus Addendum located at:
https://www.doane.edu/Syllabus
Please review these items before your course begins.