

Course Syllabus  
**BIO 346 Pathophysiology I**  
Department of Natural Sciences  
Oregon Institute of Technology

“Don’t practice (study) until you get it right. Practice (study) until you can’t get it wrong”  
- author unknown

Pathophysiology I

BIO 346 CRN 11097

Welcome to BIO 346! I’m looking forward to having an exciting and productive quarter with you!

**Instructor:** Dr. Molly O’Shaughnessy

**Email:** [molly.oshaughnessy@oit.edu](mailto:molly.oshaughnessy@oit.edu)

**Office Hours:** available by appointment

**Office Location:** near Cleveland, Ohio

**Instructor Phone:** 330-241-3090

Dr. O’Shaughnessy is on Eastern Standard Time

**Offered Online:** Fall, Winter, Spring, and Summer quarters for the 2020 – 2021 academic year

**Class Location:** online only

**Class Day/Time:** please see course schedule

**Lab:** none

**Credit Hours:** 3

**My availability:** I read the class messages in the course at least once, usually twice a day, and once or more per weekend. This is the best way to contact me. I check my OIT email less often. I am often away from my phone, and usually do not pick up calls from numbers that I do not recognize.

### Texts and Supplementary Materials

- Recommended text (not required) *Understanding Pathophysiology*, by Sue E. Huether & Kathryn L. McCance, 6<sup>th</sup> edition or later, Elsevier; ISBN 978-0-323-35409-7; This is the undergraduate version of this textbook.  
or
- Students expecting to pursue a professional school education may prefer to purchase *Pathophysiology, the Biologic Basis for Disease in Adults and Children*, by McCance & Huether, 7<sup>th</sup> edition, Elsevier ISBN 978-0-323-08854-1 instead; this is the professional school version of the above book.
- A human anatomy and physiology college textbook of your choice.
- Optional: *Study Guide and Workbook for Understanding Pathophysiology*, by Parkinson, fifth edition, Elsevier
- There are many anatomy, physiology, and pathophysiology study aids available at the bookstore and online. Think about your personal learning style and buy accordingly.

### Technology Requirements

- Computer with webcam and stable internet connection.

- Chromebooks do not work with the Proctoring software.

### **Catalog Course Description**

- Study of the dynamic aspects of the disease process with emphasis on abnormal physiology. Detailed discussion of cellular alterations, normal and abnormal immunology, neoplasia, inflammation, arteriosclerosis, hypertension, cardiac and vascular diseases. Systems interactions are discussed regularly throughout the course.

### **Prerequisites & Corequisites**

BIO 200 Medical Terminology

BIO 233 Human Anatomy & Physiology III

Both with a grade of "C" or better

### **Course Overview**

Pathophysiology is an important, foundational study upon which the further study and practice of medicine depends. First, you need to know how the body works under normal circumstances (i.e. Human Anatomy & Physiology). Then, pathophysiology teaches how that anatomy and physiology changes under different abnormal/disease conditions. Diagnosing, treating, prognosing, and preventing a disorder all depend on an understanding of the underlying pathophysiology.

### **Teaching Methodology**

This course was developed pre-covid 19 as the online counterpart of the BIO 346 class that I developed and taught live on the Klamath Falls OIT campus for many years. To ensure that my online students received the same quality of experience as my live class students, my lectures were all videotaped during live classes or of me lecturing to an empty classroom. There still may be a few lectures that are audio only, where I voiced-over my PowerPoint slides.

The PowerPoint presentations are included in each module so that you can print them out and take additional notes while watching the videos. It is important to note that you could be tested on anything discussed in lecture, whether it is written in the PowerPoints or not. I have provided them only as an aid for notetaking. Studying only the PowerPoints would most likely result in a lower grade, and some items could be taken out of context. It is important that you listen and understand the concepts that are being discussed in the videos.

Online students actually have an advantage over live students, as they can stop the tape and have me repeat myself, or review parts of the tapes before exams.

### **Student Learning Outcomes**

Upon completion of this course, the student should be able to...

1. Understand the concept of disease as an alteration of homeostasis and the general adaptative response

2. Describe the types of cellular adaptation, injury, and necrosis at the microscopic level
3. Discuss the general topic of neoplasia, including cell transformation; the role of oncogenes; the difference between benign and malignant tumors *in vivo* and *in vitro*; gradations of malignancy; grading systems of tumors; clinical experiences common to many types of cancer patients, including paraneoplastic syndromes
4. Understand fundamental concepts of normal and abnormal immunology, including the structure and function of the immunoglobulins; concepts of antigenic drift; types of immunities, to be able to compare and contrast first and second immunologic exposures; describe the pathophysiology of hypersensitivities, autoimmune diseases, and immunodeficiencies.
5. Identify the hydrostatic and oncotic balances which drive hemodynamics; to understand the mechanisms of the six types of edema formation; explain the pathogenesis of the inflammatory response; and the physiology of wound healing
6. Characterize the normal components of the hematologic system including the white blood cells, red blood cells, platelets, and clotting cascade; to be able to characterize different types of anemias, diseases that affect white blood cells, and the balance of clotting and anti-clotting elements and the results of abnormal clot formation
7. Understand the pathophysiology and steps in the development of atherosclerosis and its implications in coronary artery disease and myocardial infarction; and its interplay with hypertension; risks and epidemiology for the development of atherosclerosis; types of cholesterol and problems associated with oxidized LDLs; consequences of atherosclerosis, and interactions with other systems of the body
8. Be able to list the factors that determine blood pressure, be able to calculate cardiac output, MAP, understand normal blood pressure regulation, the concepts of peripheral resistance, and Poiseuille's Law and formula and be able to write those equations; explain the difference between primary and secondary systemic hypertension, between benign and malignant systemic hypertension; possible complications of systemic hypertension, and the effect of hypertension with various systems in the body
9. Be able to describe and name the types of aneurysms, their causes, and their clinical consequences
10. Characterize, describe, and understand importance and consequences of diseases of the venous system, including varicose veins, venous stasis ulcers, and deep vein thrombosis

11. Characterize, describe, and understand the entire spectrum of coronary artery disease (CAD) and myocardial infarction (MI), including the concept of reduced blood supply vs. increased oxygen demand; types of angina; physiology of coronary infarction; functional changes which occur in the heart due to CAD & MI; implications of the particular site of infarction; repair of myocardial infarctions; clinical manifestations and complications of MI; review of the normal conducting system of the heart; recognize ECGs of common arrhythmias, and their correlation to blood flow

**Course Schedule:**

<b>Week</b>	<b>Day</b>	<b>Topic</b>	<b>SLO</b>	<b>Assessment</b>
<b>1</b>	<b>Mon.</b>	<b>Homeostasis, Stress, &amp; Disease</b>	<b>SLO 1</b>	<b>Ex #1 Q #1, 2 F Q #1</b>
	<b>Wed.</b>	<b>Altered cells</b>	<b>SLO 2</b>	
	<b>Fri.</b>	<b>Altered cells</b>	<b>SLO 2</b>	
<b>2</b>	<b>Mon.</b>	<b>Altered cells</b>	<b>SLO 2</b>	<b>Ex #1 Q #6 – 21, 26 F Q #3 - 9</b>
	<b>Wed.</b>	<b>Neoplasia</b>	<b>SLO 3</b>	
	<b>Fri.</b>	<b>Neoplasia</b>	<b>SLO 3</b>	
<b>3</b>	<b>Mon.</b>	<b>Neoplasia</b>	<b>SLO 3</b>	<b>Ex #1 Q #22 – 52 F Q #10 – 17, 54</b>
	<b>Wed.</b>	<b>Neoplasia</b>	<b>SLO 3</b>	
	<b>Fri.</b>	<b>Neoplasia</b>	<b>SLO 3</b>	
<b>4</b>	<b>Mon.</b>			<b>Ex #2 Q #1 – 14, 45 – 51 F Q #18 - 28</b>
	<b>Wed.</b>	<b>Normal &amp; Abnormal Immunology</b>	<b>SLO 4</b>	
	<b>Fri.</b>	<b>Normal &amp; Abnormal Immunology</b>	<b>SLO 4</b>	
<b>5</b>	<b>Mon.</b>	<b>Normal &amp; Abnormal Immunology</b>	<b>SLO 4</b>	<b>Ex #2 Q #15 – 44 F Q #29 - 37</b>
	<b>Wed.</b>	<b>Normal &amp; Abnormal Immunology</b>	<b>SLO 4</b>	
	<b>Fri.</b>	<b>Inflammation &amp; Wound Healing</b>	<b>SLO 5</b>	
<b>6</b>	<b>Mon.</b>	<b>Inflammation &amp; Wound Healing</b>	<b>SLO 5</b>	
	<b>Wed.</b>	<b>Inflammation &amp; Wound Healing</b>	<b>SLO 5</b>	
	<b>Fri.</b>	<b>Inflammation &amp; Wound Healing</b>	<b>SLO 5</b>	
<b>7</b>	<b>Mon.</b>			<b>Ex #3 Q #1 – 20, 27 F Q #31, 38 - 44</b>
	<b>Wed.</b>	<b>Normal &amp; Abnormal Hematology</b>	<b>SLO 6</b>	
	<b>Fri.</b>	<b>Normal &amp; Abnormal Hematology</b>	<b>SLO 6</b>	

8	Mon.	Normal & Abnormal Hematology	SLO 6	
	Wed.	Normal & Abnormal Hematology	SLO 6	
	Fri.	Atherosclerosis	SLO 7	Ex #3 Q #22 – 26, 50
9	Mon.	Atherosclerosis	SLO 7	F Q #45 - 47
	Wed.	Hypertension	SLO 8	Ex #3 Q #21, 28 – 33
	Fri.	Hypertension	SLO 8	F Q #48, 49
10	Mon.	Aneurysms & Venous Diseases	SLO 9 & 10	Ex #3 Q #34 – 41 F Q #50
	Wed.	Coronary Artery Disease	SLO 11	Ex #3 Q # 42 – 56 F Q #51 - 53
	Fri.	Coronary Artery Disease	SLO 11	

## Grading

Please also see the University Registrar's web page on OIT's website.

### Attendance:

You are expected to view all of the videos in the course in a timely manner. This will require a minimum of three hours per week. Because of the accelerated speed of college courses, there is little time to catch up if you get behind. Additional study time of two to three hours per lecture is highly recommended.

### Exams:

Your grade will be determined by your performance on three exams, a syllabus quiz, and one accumulative final exam. All of these assessments will carry equal weight.

Abbreviations are not acceptable on exams; please write out all acronyms.

Exams are expected to be taken at their scheduled times!! You do not have to take them on the exact day mentioned in the syllabus. You have a fairly large window (one week) of availability for each exam, so this shouldn't be a problem if you plan ahead. You are totally responsible for any difficulties that rise due to late scheduling! Last minute scheduling will incur additional out of pocket fees, and a poorer selection of available times (3 am for example). Scheduling during the first part of the availability period will give you some "wiggle room" in case something unexpected comes up.

**Late Policy:** 12.5 penalty points will be deducted from your score on your first exam that is submitted late. A second offense will carry a penalty point deduction of 25 points. I have a "three strikes" policy, meaning that a third late submission will not be accepted and will receive a score of zero.

**95% Policy:** I want to encourage you to do the very best that you possibly can, not “What is the least I have to do to get an A?” To put my money where my mouth is, if you have a 95% or better average on the first two exams, I will excuse you from taking the accumulative final. You will still need to take exam #3, and your A is not guaranteed, should you do poorly on exam #3. I hope that you will rise to this challenge!

**Total Points for Course:**

505 total points in course:	
syllabus quiz	5 points
1 <sup>st</sup> lecture exam	125 points
2 <sup>nd</sup> lecture exam	125 points
3 <sup>rd</sup> lecture exam	125 points
Accumulative Final	125 points
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Total	505 points

**Grading Scale:**

- above 90% = A
- above 80%, but below 90% = B
- above 70%, but below 80% = C
- above 60%, but below 70% = D
- below 60% = F

**Borderline Grades:**

Please note that I do not “round-up” borderline grades. In case of borderline grades, I will always look at the percentage grade received on the accumulative final, or the grade received on the last exam taken, and will use that percentage to determine the grade received for the entire course.

**Proctoring**

For security reasons, all exams in this course must be proctored (supervised). This is accomplished through the web cam on your computer. Also, the proctoring software does not work on chrome books. If your computer does not have a webcam, or if you have a chrome book, you will need to make arrangements to use a computer that does.

OIT has contracted with ProctorU to supply this service. No other universities or testing centers are allowed. OIT has negotiated a fee structure with ProctorU that is significantly lower than their standard per exam fees. This fee is now covered as part of your online tuition at Oregon Tech, so that it can be covered by financial aid. If you drop the course within the deadline period of the Cashier’s timetable, then the fee will be reimbursed.

There are three important points for you to remember:

1. You will still need to create an account with ProctorU, but your fees will be waived. You can set up this account by going to [proctoru.com](http://proctoru.com) and then clicking on the 'sign up' button in the upper right-hand corner of the page.
2. You MUST plan ahead!! Schedule ALL of your exam-taking appointments at the beginning of the quarter or at least one week ahead of time. This service is used by universities across the country, so there is competition for "good times". If you delay, there may only be time slots like 2 am or 4 am left to choose from.
3. If you fail to schedule at least 72 hours prior to taking your exam, and utilize the 'Take It Now' option, you will be charged an additional fee (approximately \$10 per exam). This fee is NOT covered in your online fees and must be paid out of your pocket.

### **Notice of Nondiscrimination**

Oregon Institute of Technology does not discriminate on the basis of race, color, ethnicity, national origin, gender, disability, age, religion, marital status, sexual orientation or gender identity in its programs and activities.

### **This Syllabus is a contract for this class**

Students are responsible not only for the syllabus content for each course in which they are enrolled, but also for the general expectations and behaviors expected of all OIT students. Please refer to the current copy of the OIT Student Handbook found at <https://www.oit.edu/docs/default-source/Student-Affairs-/student-handbook/student-conduct-code.pdf> to review these guidelines.

### **Academic Integrity Policy**

Students are expected to demonstrate their knowledge with honesty and integrity. Oregon Tech considers academic dishonesty to be an unacceptable practice. The complete Oregon Tech Student Academic Integrity Policy is available on the Oregon Tech web site: <https://www.oit.edu/campus-life/student-affairs/student-resources/student-academic-integrity>.

### **Americans and Disabilities Act (ADA / Section 504)**

Students with a documented or suspected disability who require assistance or academic accommodations should contact the office of Disability Services to discuss eligibility. Contact the Disability Services office at the campus closest to you: Klamath Falls (541) 851-5227 or Portland-Metro (503) 821-1305. More information can be found at <http://www.oit.edu/academics/ssc/disability-services>.

### **Family Education Rights and Privacy Act (FERPA)**

All records related to this course are confidential and will not be shared with anyone, including parents, spouses, etc. without a privacy release form signed by you. More information can be found at <https://www.oit.edu/registrar>.

### **Title IX Information**

Oregon Tech faculty and staff are committed to creating and maintaining a safe and equitable learning environment for the Oregon Tech community. Pursuant to U.S. Department of Education requirements, all Oregon Tech faculty and staff (other than designated confidential staff) must report any information they become aware of regarding gender-based bias, sexual harassment, sexual assault, sexual misconduct, relationship violence, or stalking involving a student to the University Title IX Coordinator. For more information please see <https://www.oit.edu/title-ix>. You can contact OIT's Title IX Coordinators' Office at 541-885-1108 or [TitleIX@oit.edu](mailto:TitleIX@oit.edu).

### **Safety and Health Services for Students**

Information on safety and health services available to students on campus can be found by contacting student health services at 541-885-1800. Some of these services may or may not be available to online students.

Additional information on Academic and University Policies can be found on OIT's main website.