Mechanisms of Disease: Introduction to General Pathology  
BHS 329  
Spring 2018

Time: MWF 12-1 pm  
Room: LINC 314

INSTRUCTOR: Michael Kent, Nash 532  
Michael.Kent@oregonstate.edu

Course credits: 3  
Course pre-reqs/co-reqs: BI 211, BI 212

Course Structure:  
This course provides an introduction to basic principles of disease, focused on structural and functional changes of cells, tissues and organs, and their relationships to clinical disease. The emphasis of the course is at the cellular to organ level, but will cover some on molecular mechanisms as pertinent.

The course will cover disease at a cellular level; how cells are injured and die (e.g., apoptosis and necrosis, cellular storage diseases). An introduction to immunology and inflammatory defenses, tissue repair and wound healing, how cells transform and acquire malignant characteristic and carcinogenesis. Introductions to diseases caused by infectious agents (viruses, bacteria, fungi) are included. Lectures on nutritional and toxicological diseases are included. Last, we will review important, specific diseases of major organ systems - e.g., cardiovascular, pulmonary, gastrointestinal, renal, endocrine and neurological diseases.

Learning Outcomes:  
- Understanding of the basic principles of pathology and mechanisms of disease in general at an introductory level.
- Understand and differentiate disease process in major organ systems.
- Understanding of the disease process in major human diseases, such as cardiovascular disease, diabetes, infectious diseases, etc.
- Understand basic concepts of immunology, neoplasia, and wound repair.
- Understanding of general terms and terminology used in pathology

Lectures are presented by Dr. Kent, with guest lectures by:

Dr. Sean Spagnoli  
Dr. Brian Dolan  
Dr. Luiz Bermudez  
Dr. Dan Rockey  
Dr. Justin Sanders  
Dr. Chris Gaulke

OFFICE HOURS: By appointment with Dr. Kent. We are open to answering questions by email.
Class Conduct

This is a large, somewhat crowded class, and we must respect fellow students, professors, and guest speakers.

1) No texting  
2) Discussion with the class and professor is welcome during lectures, but no chatting with classmates  
3) Computers are OK, but only for use with the PPT presentations  
4) No cheating  
5) Participation. It is your choice if you come to class, but do not leave until the end of the lecture unless pre-arranged with the speaker for the day.

The following information is summarized from the OSU Student Conduct Regulations:  
Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- *cheating-* use/attempts use of unauthorized materials, information or study aids  
- *fabrication-* falsification or invention of any information  
- *assisting-* helping another commit an act of academic dishonesty  
- *tampering-* altering or interfering with evaluation instruments and documents  
- *plagiarism-* representing the words or ideas of another person as one's own

When evidence of academic dishonesty comes to the instructor's attention, the instructor will document the incident, permit the accused student to provide an explanation, advise the student of possible penalties, and take action. The instructor may impose any academic penalty up to and including an "F" grade in the course after consulting with his/her department chair and informing the student of the action taken.

The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office

University and Departmental Policy:

“Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. In order to arrange alternative testing, the students should make the request at least one week in
advance of the test. Students seeking accommodations should be registered with the Office of Services for Students with Disabilities.”

The Department of Microbiology follows the university rules on civility and honesty. These can be found at osu.orst.edu/instruct/cssa556/CIVHON556. The section on plagiarism is required reading. The Department has additional concerns about referencing material from the Internet. Any information obtained from the Internet should be cited as completely as possible with the author's name, title of the web site, affiliation of the author and date the material was put on the web or last updated. You should also do some critical analysis of the credibility of the information as anyone can put information onto the web.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Guest Lecturers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific dates change depending on year of course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Apr</td>
<td>wk 1 Introduction, Class structure, some definitions,</td>
<td></td>
</tr>
<tr>
<td>4 Apr</td>
<td>Disease at the cellular level</td>
<td>Dolan</td>
</tr>
<tr>
<td>6 Apr</td>
<td>Intro to Immunology</td>
<td></td>
</tr>
<tr>
<td>9 Apr</td>
<td>wk 2 Inflammation</td>
<td>Sanders</td>
</tr>
<tr>
<td>11 Apr</td>
<td>Inflammatory Diseases</td>
<td>Dolan</td>
</tr>
<tr>
<td>13 Apr</td>
<td>Wound and wound repair</td>
<td></td>
</tr>
<tr>
<td>16 Apr</td>
<td>wk 3 Hemorrhage &amp; Cardiovascular Diseases</td>
<td>Sanders</td>
</tr>
<tr>
<td>18 Apr</td>
<td>Neoplasia and Carcinogenesis</td>
<td></td>
</tr>
<tr>
<td>20 Apr</td>
<td>Gastrointestinal</td>
<td></td>
</tr>
<tr>
<td>23 Apr</td>
<td>wk 4 Mid Term 1</td>
<td></td>
</tr>
<tr>
<td>25 Apr</td>
<td>Gastrointestinal (Microbiome)</td>
<td>Gaulke</td>
</tr>
<tr>
<td>27 Apr</td>
<td>Liver and Pancreas</td>
<td></td>
</tr>
<tr>
<td>30 Apr</td>
<td>wk 5 Kidney and Urinary Tract</td>
<td></td>
</tr>
<tr>
<td>2 May</td>
<td>Respiratory Diseases</td>
<td></td>
</tr>
<tr>
<td>4 May</td>
<td>Gonadal and Reproductive Diseases</td>
<td></td>
</tr>
<tr>
<td>7 May</td>
<td>wk 6 Neurological Diseases</td>
<td>Spagnoli</td>
</tr>
<tr>
<td>9 May</td>
<td>Endocrine Diseases</td>
<td></td>
</tr>
<tr>
<td>11 May</td>
<td>Congenital and Hereditary Diseases</td>
<td></td>
</tr>
<tr>
<td>14 May</td>
<td>wk 7 Skin</td>
<td></td>
</tr>
<tr>
<td>16 May</td>
<td>Bone, Joint and Soft Tissue Diseases</td>
<td></td>
</tr>
<tr>
<td>18 May</td>
<td>Mid Term 2</td>
<td></td>
</tr>
<tr>
<td>21 May</td>
<td>wk 8 Infectious Disease: Gram negative bacteria</td>
<td>Rocky</td>
</tr>
<tr>
<td>23 May</td>
<td>Infectious Disease: Tuberculosis</td>
<td>Bermudez</td>
</tr>
<tr>
<td>25 May</td>
<td>Viral Diseases</td>
<td></td>
</tr>
<tr>
<td>28 May</td>
<td>wk 9 Holiday</td>
<td></td>
</tr>
<tr>
<td>30 May</td>
<td>Infectious Disease: Arthropods</td>
<td></td>
</tr>
<tr>
<td>1 June</td>
<td>wk 10 Infectious Disease Helminths</td>
<td></td>
</tr>
<tr>
<td>4 June</td>
<td>Nutritional Diseases</td>
<td></td>
</tr>
<tr>
<td>6 June</td>
<td>Infectious Diseases: Protozoa – Dr. Sanders</td>
<td>Sanders</td>
</tr>
<tr>
<td>8 June</td>
<td>No Class</td>
<td></td>
</tr>
<tr>
<td>11 June</td>
<td>Final 6-8 pm</td>
<td></td>
</tr>
</tbody>
</table>
Reading Assignments Robbin’s Basic Pathology and others.

You will not be tested on reading material that I haven’t covered in class. The intent is providing another medium to present the same material and possibility another way of presenting concepts that may help you obtained the required knowledge for the class.

Concentrate on the sections that pertain to the specific parasites covered in lectures. Also, you might find some of the additional information interesting, even if you will not be tested on it.

2 April - Intro
4 March Chapter 2: Cell Injury and Death, and Responses/Adaptations
6 April Dolan’s Immunology Lecture
9 April Inflammation – (Sanders) Chapter 3: Inflammation. Pages 57-85.
11 April – Inflammatory Diseases Chapter 4 (Dolan): Chapter 5.
13 April. Hemorrhage and wound repair –Chapter 3: pages 86-93
16 April Chapter 3 Hemorrhage and Cardiovascular Disease – Sanders. Chap 4
Esophagus. pages 591-594. Esophageal Varices, Reflux Esophagitis (Gastroesophageal reflux disease (GERD)).
Stomach. 598 Acute Gastritis, Ulcers (pages 601-602)
Small and Large Intestine: Starting page 607 – skip to page 611, concentrate on Diarrheal Diseases Page 576. Malabsorption, Lactase Deficiency, Celiac Disease (gluten-sensitive enterophathy) , Irritable Bowel Syndrome and Inflammatory Bowel Disease (starting page 631).
23 April MIDTERM 1 (will not up through Neoplasia).
25 April. Gastrointestinal. (Con’t)
27 April Liver, Gall Bladder, and Pancreas. Chapters 16 and 17. Starting page 637

Introduction p 637-638
Liver failure and systemic effects, Cirrhosis p 640-641
Jaundice
Fatty Liver and Alcoholic Liver Disease – p. 652-655
Jaundice/Cholestatic syndromes pp 659-661.
Gall stones (Cholelithiasis) p. 672, 773.

Pancreas: Chapter 17. (Exocrine Pancreas). Page 679
Acute Pancreatitis: p. 680-682

30 April Chapter 13. Kidney and Urinary Tract
Kidney Diseases a) Nephrotic Syndrome, Glomerulonephritis, Kidney Stones, Cystic diseases
Glomerular diseases and Nephrotic syndrome page 552-564.
Kidney Stones: page 576
Cystic diseases page 573-575.

2 May Respiratory Diseases/Lung. Chapter 13
Atelectasis (Collapse) 495
Acute lung diseases and infections (e.g. pneumonia) 495-497
Obstructive vs Restrictive 498-501
Asthma, Emphysema 503-505
Chronic diseases and infections Cryptococcus and other fungi, 535-536
Environmental Exposure Anthracosis (Coal), Asbestosis, Silicosis) pages 509-511:
Lung Cancer– 537-540
4 May  Gonadal and Reproductive Diseases (Chapter

Male: Chapter 18 (starting page 691)
Prostate Hyperplasia & Prostate Cancer (698-701)
Neoplasms: Testicular Cancer; 693-697
Sexually Transmitted Diseases, Treponema pallidium (syphilis) (page 705)
Neisseria gonorrhoea (708), Herpes simplex (711-712).

Female: Chapter 19
Infections: Trichomonas vaginalis, Yeast infections
Neoplasia: Cervical Cancer and PAP smears, Ovarian Cancer: page 717-720
Endometritis – page 721
Endometriosis: page 721-722
Ovarian Tumors: 727-728

7 May  Chapter 22, 23. Neural diseases. Dr. Spagnoli
Chapters really don’t cover Dr. Spagnoli’s lecture. His lecture is complete, and well
illustrated and provides all the information in the PPT presentation.

9 May  Chapter 20. Endocrine Diseases. (page 749)
Thyroid: Goiter (762-763)
Endocrine Pancreas: Diabetes (Type 1 and Type 2). 772-783
Adrenal: Cushing Syndrome (ppages 785-788) and Addison’s Disease (pages 790-793)

11 May  Congenital and Hereditary Diseases
Cystic Fibrosis
Down Syndrome
Sickle cell anemia
Congenital: Virus: AIDs, Toxicant: Fetal Alcohol Syndrome, TORCH & Toxoplasmosis
14 May  Chapter 24  Skin
Allergic Reactions, Warts
UV exposure
Neoplasia & Preneoplastic
Basal Cell
Squamous Cell
Melanomas

16 May  Chapter 20  Bone and Joint
Bone: Osteoporosis, Paget’s disease, neoplasia (Primary and Multiple myeloma)
Cartilage, Joint: Osteoarthritis and Rheumatoid arthritis.
Muscle: General myositis and myodegeneration and repair.

18 May  Midterm 2

Infectious Diseases Chapter 8 on Infectious diseases and PDFs on specific pathogens

21 May  Gram Negative Bacteria  – Dr. Rockey

23 May  Mycobacteria  – Dr. Bermudez. Chapter 13, starting 526

25 May  Viral Diseases
   Brief Introduction to viruses
   Acute viral diseases (e.g., Ebola)
   Herpes viruses (chicken pox/shingles, Herpes simplex 1 and 2)
   Viruses and cancer:
       Retroviruses
       Epstein Barr (herpes virus 4) and lymphoma
Arboviruses (ZIKA and several others)
Norovirus
AIDS (very brief).

28 May Holiday
30 May  Protozoa,
1 June  Helminths and Arthropods
4 June  Nutritional Diseases
6 June  Toxicopathic diseases and toxicology