Course Title	**Clinical Pathophysiology**				
Course Code	**MED-404**				
Course Type	Required				
Level	Undergraduate				
Year/ Semester	Year 4				
Teacher's Name	**Course Lead:** Dr Stelia Ioannidou Kadis **Other contributors:** Dr Evis Bagdades Prof Panayiotis Avraamides Prof Efthyvoulos Anastassiades Prof Panos Economou Prof Marios Panos Prof Theodoros Kyriakides Dr Evagoras Nicolaides Dr Elena Thomaidou Dr Chrysa Tziakouri Dr Gabriel Kalakoutis Dr Yiola Marcou Dr Elpida Mina Dr Danny Alon-Ellenbogen				
ECTS	6	Lectures / week	4	Laboratories / week	0
Course Purpose and Objectives	The main objectives of the course are: 1. To provide the students with an understanding of (a) the signs and symptoms and (b) the pathophysiology of the main disorders of the cardiovascular system, respiratory system, gastrointestinal system, endocrine system, renal system, reproductive system, central and peripheral nervous system, musculoskeletal system and skin, with reference to relevant infectious diseases and multisystem disorders. 2. Establish a knowledge base for various clinical problems encountered in Internal Medicine and introduce the fundamental concepts of pathophysiology in the clinical setting. 3. Ease the transition from the basic sciences to clinical medicine.				

Learning Outcomes	The following list provides the learning objectives that will be covered in the lectures and tutorials of each week: **Week 1** 1. Demonstrate the ability to lay out a case presentation in a structured manner including all common sections of the history, examination and investigations. 2. Demonstrate a systematic approach to forming a differential diagnosis. 3. Describe the diagnostic approach to a raised creatinine. 4. Describe the causes and manifestations of acute and chronic renal failure. 5. Describe the history, examination and investigation findings in acute tubulointerstitial nephritis. 6. Recognise the common pathologies identified on a urinalysis. 7. Describe the key history, examination and investigation findings of common conditions presenting with Proteinuria including Nephrotic Syndrome. 8. Describe the differential diagnosis of haematuria and proteinuria. 9. Describe the key history, examination and investigation findings of common conditions presenting with Haematuria including: Renal Calculus, Pyelonephritis, Glomerulonephritis, Cystitis, Renal/urinary tract malignancies. 10. Recognise acute renal and urological clinical presentations. 11. Describe the presentation and complications of type I and II diabetes. 12. Describe the key history, examination and investigation findings of diabetes presentations including Accelerated Atherosclerosis, Cerebrovascular Disease, Peripheral Vascular Disease, Diabetic Ulcer, Diabetic Foot Infections, Retinopathy, Nephropathy, Neuropathies, Hypoglycaemia, Diabetic Ketoacidosis, Hyperosmolar Hyperglycaemic State 13. Recognise the acute endocrine presentations associated with phaeochromocytoma, adrenocortical insufficiency, thyrotoxicosis, myxoedema coma and hypercalcaemia. 14. Recognise the use of the common tests used to diagnose acute endocrine pathologies. 15. Identify a normal 12-lead ECG in terms of the rate, rhythm, axis, waves, complexes, intervals and segments 16. Recognise the multi-system differential diagnosis of a chest pain presentation. 17. Describe the key history, examination and investigation findings of common conditions presenting with chest pain including Myocardial Infarction, Aortic Dissection, Angina, Pericarditis, Pulmonary Embolus, Pneumothorax, Pneumonia, Pulmonary Malignancy, Peptic Ulcer Disease, Ruptured Oesophagus, Oesophageal Reflux, Oesophageal Spasm, Costochondritis and Herpes Zoster. 18. List the main emergency causes of chest pain. 19. Recognise the key findings of diagnostic tests for chest pain. 20. Describe the diagnostic approach to chest pain as an emergency. 21. Recognise the other localising and non-localising symptoms that may have a cardiac aetiology **Week 2** 22. Outline the differential diagnosis of a breast mass. 23. Describe the history, examination features and investigation findings of common conditions presenting with a breast mass. 24. Develop a differential diagnosis list for an acute cough presentation in order of likelihood

25. Develop a differential diagnosis list for a chronic cough presentation in order of likelihood
26. Describe the multi-system differential diagnosis of an acute cough and a chronic cough presentation
27. Describe the key history, examination and investigation findings for common conditions presenting with acute and chronic cough including ACUTE: Foreign Body Inhalation Upper Respiratory Tract Infection, Pneumonia, Infective Exacerbation of Chronic Obstructive Pulmonary Disease; CHRONIC: Bronchial Carcinoma, Pulmonary TB, Asthma, COPD, Congestive Cardiac Failure,Gastro-oesophageal Reflux Disease, Rhino-sinusitis, Bronchiectasis, Diffuse Parenchymal Lung Disease, Medications
28. Recognise ECG features associated with Myocardial Infarction, Pericarditis, LVH, RVH and Cardiac Tamponade.
29. Recognise ECG features associated with cardiac arrhythmias (incl. AF, A.flutter, V.tach, V.fib, Heart block, Bundle Branch Blocks).

Week 3

30. Recognise the advantages and disadvantages of X-rays in diagnosis.
31. Identify the normal anatomical landmarks on a chest radiograph.
32. Recognise the projection, penetration, rotation, inspiration and artifact of a normal chest radiograph.
33. Describe the key history, examination and investigation findings of common conditions affecting the liver including hepatitis, non-alcoholic fatty liver disease, cirrhosis. Diagnostic approach to patient presenting with jaundice
34. Describe the differential diagnosis of upper and lower gastrointestinal bleeding.
35. Describe the key history, examination and investigation findings of common conditions presenting with upper gastrointestinal bleeding: Duodenal/Gastric Ulcer, Gastro-oesophageal Varices, Erosive Oesophagogastritis, Mallory-Weiss Tear, Gastric Tumour; and lower gastrointestinal bleeding: Colonic carcinoma, Diverticular Bleeding, Inflammatory Bowel Disease, Infective Colitis, Angiodysplasia.
36. Describe the differential diagnosis of an acute abdominal pain presentation.
37. Describe the key history, examination and investigation findings of common conditions presenting with acute upper abdominal pain: Acute Hepatitis, Gallbladder pathologies, Congestive Hepatopathy, Oesophagitis, Peptic Ulcer Disease, Pancreatitis, Perforated Oesophagus, Abdominal Aortic Aneurysm, Splenic Pathology, Intra-abdominal Abscess, Pyelonephritis, Renal/Ureteric Colic, Testicular Torsion
38. Develop differential diagnosis lists for acute upper abdominal presentations in order of likelihood.
39. Describe the key history, examination and investigation findings of common conditions presenting with acute lower abdominal pain: Describe the key history, examination and investigation findings of common conditions presenting with acute lower abdominal pain: Appendicitis, Crohn's Disease, Ulcerative Colitis, Cystitis, Urinary Retention, Diverticulitis, Sigmoid Volvulus
40. Describe the key history, examination and investigation findings of common conditions presenting with acute acute generalised abdominal pain: Gastroenteritis, Infectious Colitis, Mesenteric Ischaemia, Irritable Bowel Syndrome.
41. Recognise the clinical use of ultrasound and CT imaging in the diagnosis of abdominal pathology.

Week 4

42. Recognise acute endocrine clinical presentations.
43. Recognise and interpret common abnormalities in biochemistry lab tests.
44. Outline the differential diagnosis of a headache presentation.
45. Describe the key history, examination and investigation findings of common conditions presenting with headache including: Meningitis/Encephalitis, Haemorrhage, Cerebral Venous Thrombosis, Giant Cell Arteritis, Carotid/Vertebral Artery Dissection, Acute Angle-Closure Glaucoma, Malignant Hypertension, Tension Headache, Cluster Headache, Migraine, Rebound, Raised ICP, Normal-Pressure Hydrocephalus.

Week 5 and 6

No sessions

Week 7

46. Develop a differential diagnosis list for a chest pain presentation in order of likelihood.

Week 8

47. Demonstrate a systematic approach to arterial blood gas interpretation
48. Identify the main abnormalities observed in arterial blood gas analysis.
49. Outline the differential diagnosis of vaginal bleeding presentation.
50. Describe the key history, examination and investigation findings of common conditions presenting with vaginal bleeding including: Pelvic Inflammatory Disease, Uterine Fibroids, Cervical/Endometrial Polyps, Endometriosis, Malignancy of Endometrium/Cervix/Vulva/Ovary/Fallopian Tube.
51. Outline the differential diagnosis of abdominal pain with a gynaecological cause
52. Describe the key history, examination and investigation findings of common conditions presenting with abdominal pain with a gynaecological cause including: Ovarian cyst(rupture, torsion, haemorrhage), Salpingitis, Ectopic Pregnancy, Uterine Fibroids.

Week 9

No sessions

Week 10

53. Describe the differential diagnosis of acute and chronic dyspnoea presentations.
54. Describe the key history, examination and investigation findings of common conditions presenting with acute and chronic dyspnoea including ACUTE: Aspiration, Anaphylaxis, Myocardial Infarction, Cardiac Arrhythmia, Pulmonary Oedema, Pneumothorax, Asthma Attack, Pulmonary Embolism, Metabolic Acidosis, Panic Attack; CHRONIC: Lung Malignancy, Pleural Effusion, Lobar Collapse, Respiratory Muscle Weakness, COPD, Bronchiectasis, Diffuse Parenchymal Diseases, Anaemia, Congestive Cardiac Failure, Pulmonary Hypertension.
55. Describe how pulmonary function testing can be used to distinguish between causes of chronic dyspnoea.
56. Develop a differential diagnosis list for acute dyspnoea presentation in order of likelihood

57. Develop a differential diagnosis list for a chronic dyspnoea presentation in order of likelihood.
58. Describe the relevant history, examination and investigation findings of a patient presenting with heart failure. To also include common causes of this presentation.

Week 11

59. Develop differential diagnosis lists for acute Vaginal Bleeding and Gynaecological Abdominal Pain in order of likelihood.

Week 12

No sessions

Week 13

60. Describe the key history, examination and investigation findings of common conditions presenting with a rash (of infectious origin) including: BACTERIAL: Cellulitis, Impetigo, Staphylococcal Scalded Skin Syndrome, Lyme Disease; VIRAL: Measles, Rubella, Parvovirus B19, Molluscum contagiosum, HPV warts, secondary Syphilis, HSV, VZV; FUNGAL: Ringworm, Candida; PARASITIC: Scabies.
61. Describe the key history, examination and investigation findings of common conditions presenting with a rash (non-infectious origin) including: Eczema, Seborrhoeic Dermatitis, Psoriasis, Urticaria, Erythema Nodosum, Severe Drug Reaction (TEN/SJS), Bullous Pemphigoid, Pemphigus Vulgaris, Actinic Keratosis, Skin Malignancy (SCC, BCC, MM).

Week 14 and 15

No sessions

Week 16

Formative Midterm Exam

Week 17, 18, 19 and 20

No sessions

Week 21

62. Describe the use of imaging in the diagnosis of joint and bone pathology.
63. Describe main pathophysiological mechanism of septic shock, as well as innate immunity overactivation and inflammatory network imbalances.
64. Describe early recognition signs of a patient with sepsis or septic shock, explain sepsis-2 & sepsis-3 criteria.
65. Describe assessment & treatment approach based on pathophysiology and the major goals of therapy.
66. Bone and joint infections - Osteomyelitis and septic arthritis (both native and prosthetic joints)

Week 22

67. Outline the relevant history, examination and investigations for a stroke presentation.

	Week 23 68. Recognise the chest radiograph features associated with heart failure, malignancy and connective tissue disease. 69. Recognise the chest radiograph features associated with pulmonary and pleural disease. 70. Outline the relevant history, examination and investigations for a stroke presentation 71. Recognise the role of Neurological Imaging in Stroke **Week 24** 72. Recognise the features on history, examination and the investigations which inform diagnosis of SLE, Rheumatoid Arthritis, Sarcoidosis, Systemic Sclerosis. 73. Describe the differential diagnosis of an Inflamed Joint. 74. Describe the key history, examination and investigation findings of common conditions presenting with a inflamed joint including: Septic Arthritis, Gout, Pseudogout, Traumatic Haemarthrosis, Osteoarthritis, Rheumatoid Arthritis, Seronegative Arthropathies, Systemic Lupus Erythematosis, Sarcoidosis, Polymyalgia Rheumatica. **Week 25 and 26** **No sessions** **Week 27** 75. Recognise musculoskeletal and multi-system disorder presentation. **Week 28** **No sessions**		
Prerequisites	MED-304 Pathology I MED-309 Pathology II	Required	None.
Course Content	• Introductory Session • Intro to ECG • Structure of case presentation • Approach to Differential Diagnosis (The Surgical Sieve) • Intro to Chest X-ray • Diabetes Clinical Presentations & Complications • Other Acute Endocrine Presentations • Endocrine Test Interpretation • ECG • Cough • Pneumonia • Chest Pain 1 • Chest Pain 2 • Breast Mass • Renal 1 • Renal 2 • Altered metal state presentation (1 & 2) • Liver Pathology • Interpretation of liver function tests • Gastrointestinal Bleeding • Acute Upper Abdominal Pain • Acute Lower Abdominal Pain		

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Acute Generalised Abdominal Pain
Abdominal Imaging Interpretation 1 & 2
Renal Tutorial
Endocrine Clinical Scenarios Tutorial
Headache
Acute Upper, Lower, and Generalised Abdominal Pain Tutorial
ECG Tutorial
Chest Pain Tutorial 1
Chest Pain Tutorial 2
Arterial Blood Gas
Shortness of Breath
Heart failure
Vaginal Bleeding Presentations
Abdominal Pain (Gynaecological Origin)
Shortness of BreathTutorial
Reproductive System Tutorial
Rashes of Infectious Origin
Rashes of non-Infectious Origin
Musculoskeletal Tutorial
Diabetes mellitus management and complications (acute and chronic)
Sepsis and septic shock to be delivered
Chest X-ray
Stroke
Stroke and Neurological Imaging
Imaging Trauma and Interventional Radiology-Imaging: Strokes and Head Injury
Neurology Tutorial
Multi-system Disorders
Inflamed joints
Musculoskeletal imaging
Bone and joint infections - Osteomyelitis and septic arthritis

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<tr><td>Teaching Methodology</td><td>Lectures, Tutorials.</td></tr>
<tr><td>Bibliography</td><td>Required Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Adam Feather, David Randall, Mona Waterhouse</td><td>Kumar and Clark's Clinical Medicine</td><td>Elsevier
10th Edition</td><td>2020</td><td>9780702078682</td></tr>
<tr><td>Anil Agarwal, Santhini Jeyerajah, Rhiannon Harriesm Ruwan Weerakkody, Greg Mclatchie, Neil Borley</td><td>Oxford Handbook of Clinical Surgery</td><td>OUP
Oxford
5th Edition</td><td>2022</td><td>9780198799481</td></tr>
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Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Aaron Berkowitz	Clinical pathophysiology made ridiculously simple	MedMaster	2021 2nd Edition	9781935660446
Stefan Silbernagl & Florian Lang	Color Atlas of Pathophysiology	Thieme	2016 3rd Edition	9783131165534
E-book Permalink: https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=6187170				
Farne, Norris-Cervetto, Warbrick-Smith	Oxford Cases in Medicine and Surgery	Oxford University Press	2016 2nd Edition	9780198716228
E-book Permalink: https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=5891951				
Gary D. Hammer & Stephen J. McPhee	Pathophysiology of Disease (An Introduction to Clinical Medicine)	McGraw Hill LANGE)	2018 8th Edition	9781260026504

Assessment	Formative Midterm Exam and Summative Final Exam. The Summative Final Exam will contribute towards 100% of the course grade. Assessment is by Single Best Answer MCQs (SBAs) and there may also be some Short Answer Questions (SAQs).
Language	English