



Syllabus Master's Degree Course in Medicine and Surgery

DISEASES OF THE CARDIOVASCULAR AND ENDOCRINE SYSTEMS

Third year, first semester (14 academic credits [CFU])

Teachers

Subject	Academic credits (CFU)	Lecturer
Cardiovascular diseases	4	CAPODANNO Davide, CAPRANZANO Piera
Vascular surgery	2	SPINELLI Domenico
Cardiac surgery	1	TBD
Endocrinology	3	LA VIGNERA Sandro
Applied pharmacology	2	DRAGO Filippo
Anatomopathology	1	BROGGI Giuseppe
Applied diagnostics	1	BASILE Antonello

Learning outcomes

Subject	Learning outcomes
Cardiovascular diseases	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none">Describe the pathophysiology, diagnosis, and management of major cardiovascular diseases.Interpret common clinical signs and test results.Outline preventive and therapeutic strategies. <p>At the end of the module, the student will understand the clinical spectrum of cardiovascular diseases and principles of evidence-based management.</p>
Vascular surgery	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none">Describe the main diseases affecting arterial and venous vessels.Identify the indications for surgical and endovascular treatment.Recognize the principles of perioperative management in vascular surgery. <p>At the end of the module, the student will understand the clinical presentation, diagnostic work-up, and treatment strategies for common vascular surgical conditions.</p>

Cardiac surgery	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none"> • Identify the main indications for cardiac surgery. • Describe the most common surgical procedures on the heart and great vessels. • Recognize common postoperative complications and principles of management. <p>At the end of the module, the student will understand surgical approaches to structural and ischemic heart disease, and the fundamentals of perioperative care.</p>
Endocrinology	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none"> • Describe the clinical features and pathophysiology of major endocrine disorders. • Interpret basic hormonal laboratory tests. • Identify the principles of diagnosis and management of endocrine diseases. <p>At the end of the module, the student will understand the core concepts of endocrine physiology, pathology, and clinical presentation.</p>
Applied pharmacology	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none"> • Describe the pharmacodynamic and pharmacokinetic principles relevant to cardiovascular and endocrine drug therapy. • Identify and classify major pharmacological agents used in the management of diseases of the heart, vessels, and endocrine organs. • Analyze drug interactions, adverse events, and individualized treatment strategies based on clinical context. <p>At the end of the module, the student will understand how pharmacological reasoning is applied to the prevention, treatment, and long-term management of cardiovascular and endocrine diseases, including multimorbidity and polypharmacy scenarios.</p>
Anatomopathology	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none"> • Recognize the histopathological hallmarks of common cardiovascular and endocrine disorders. • Correlate microscopic and gross pathology with clinical syndromes and imaging findings. • Understand the basis of disease mechanisms and progression from a tissue perspective. <p>At the end of the module, the student will understand the structural basis of disease in the cardiovascular and endocrine systems, enabling clinical reasoning that integrates morphology, physiology, and diagnostics.</p>
Applied diagnostics	<p>By the end of the module, students are expected to:</p> <ul style="list-style-type: none"> • Identify the role of key imaging modalities in the evaluation of cardiovascular and endocrine diseases. • Recognize the indications, strengths, and limitations of common radiological techniques. • Correlate basic imaging findings with clinical conditions involving the heart, vessels, and endocrine organs. <p>At the end of the module, the student will understand the principles and applications of diagnostic imaging in cardiovascular and</p>

	endocrine medicine, including appropriate modality selection and interpretation of typical findings.
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Prerequisites

Subject	Prerequisites
Cardiovascular diseases	Attainment of the educational objectives set by prerequisite courses.
Vascular surgery	
Cardiac surgery	
Endocrinology	
Applied pharmacology	
Anatomopathology	
Applied diagnostics	

Course contents

Subject	Course contents
Cardiovascular diseases	<ul style="list-style-type: none"> • Coronary artery disease and acute coronary syndromes • Heart failure: classification and management • Atrial fibrillation and other arrhythmias • Hypertension: diagnosis, evaluation, and treatment • Valvular heart diseases • Pericardial diseases • Cardiomyopathies • Risk stratification and prevention
Vascular surgery	<ul style="list-style-type: none"> • Aneurysmal disease: abdominal and thoracic aortic aneurysms • Carotid artery disease: diagnosis and treatment options • Acute and chronic lower limb ischemia • Principles of endovascular versus open surgical repair • Vascular access creation and complications • Deep vein thrombosis and chronic venous insufficiency • Basic principles of perioperative management and follow-up
Cardiac surgery	<ul style="list-style-type: none"> • Coronary artery bypass grafting (CABG): techniques and indications • Valve surgery: repair and replacement • Surgical treatment of aortic aneurysms and dissections • Minimally invasive and transcatheter techniques • Mechanical circulatory support: ECMO, LVAD • Operative risk assessment and perioperative management • Postoperative complications and their management
Endocrinology	<ul style="list-style-type: none"> • Overview of endocrine regulation and feedback mechanisms • Disorders of the thyroid: hypothyroidism, hyperthyroidism, thyroid nodules • Adrenal disorders: Addison's disease, Cushing's syndrome, pheochromocytoma • Pituitary diseases: hypo- and hyperfunction syndromes • Calcium and bone metabolism disorders: hyperparathyroidism, osteoporosis • Diabetes mellitus: types, diagnosis, complications

	<ul style="list-style-type: none"> Basics of endocrine neoplasms
Applied pharmacology	<ul style="list-style-type: none"> Receptor pharmacology and signal transduction in endocrine and cardiovascular tissues Principles of drug absorption, distribution, metabolism, and excretion with relevance to heart and endocrine disorders Antihypertensive therapy: drug classes, mechanisms, combination strategies Anti-ischemic and antianginal agents Anticoagulants and antiplatelet drugs: use in atrial fibrillation, venous thromboembolism, and coronary artery disease Pharmacological management of heart failure and arrhythmias Insulin therapy and oral hypoglycemics: mechanisms and clinical use Drugs affecting thyroid and adrenal function Pharmacovigilance: adverse drug reactions, therapeutic monitoring, and safe prescribing practices in endocrine and cardiac patients
Anatomopathology	<ul style="list-style-type: none"> Vascular pathology: atherosclerosis, vasculitis, arterial and venous thrombosis Ischemic heart disease: histologic evolution of myocardial infarction Pathology of the myocardium: myocarditis, hypertrophic and dilated cardiomyopathy Pathology of cardiac valves: degenerative, inflammatory, and infective lesions Histopathology of the endocrine glands: thyroiditis, thyroid nodules, adrenal hyperplasia and tumors, pituitary adenomas Diabetes-related organ damage: pancreatic islet changes, nephropathy, vascular lesions Basic principles of immunohistochemistry and molecular pathology applied to endocrine and cardiac tumors
Applied diagnostics	<ul style="list-style-type: none"> Basic principles of imaging techniques: X-ray, ultrasound, CT, MRI, nuclear medicine Chest X-ray: interpretation of heart size, pulmonary vasculature, and mediastinal contours Echocardiography: anatomical views, indications, and basic interpretation CT and MR angiography: evaluation of aortic pathology and peripheral vascular disease Imaging of endocrine organs: <ul style="list-style-type: none"> Thyroid ultrasound (nodules, goiter, autoimmune disease) Adrenal imaging (incidentalomas, hyperplasia, neoplasms) Pituitary MRI: adenomas and sellar lesions Functional imaging: thyroid scintigraphy, PET/CT in endocrine tumors

Assessment methods

Subject	Assessment methods
Cardiovascular diseases	The final assessment of acquired knowledge is conducted by an oral exam. The grade is expressed on a scale of thirty, up to a maximum of 30/30 cum laude (with honors). The final grade is determined by the weighted average of the scores obtained in the course subjects.

Vascular surgery	<p>The oral examination consists of an interview during which questions will cover at least three different topics from the course curriculum. The assessments aim to evaluate: i) the level of knowledge in the disciplines; ii) the ability to apply this knowledge to solve specific problems related to the disciplines (autonomous problem-solving); iii) clarity of expression; iv) proficiency in medical-scientific language. The assessment of learning can also be conducted remotely if the conditions necessitate it.</p> <p>For the assignment of the final grade, the following parameters will be considered:</p> <ul style="list-style-type: none"> Score 29-30 with honors: The student demonstrates an in-depth knowledge of the topics, promptly and correctly integrates and critically analyzes presented situations, independently solving even highly complex problems. They possess excellent communication skills and command medical-scientific language proficiently. Score 26-28: The student has a good understanding of the topics, is able to integrate and critically and logically analyze presented situations, can fairly independently solve complex problems, and presents topics clearly using appropriate medical-scientific language. Score 22-25: The student has a fair understanding of the topics, although it may be limited to the main areas. They can integrate and critically analyze presented situations, although not always in a linear fashion, and present topics fairly clearly with moderate language proficiency. Score 18-21: The student has minimal knowledge of the topics, possesses modest ability to integrate and critically analyze presented situations, and presents topics sufficiently clearly, although their language proficiency may be underdeveloped. Exam not passed: The student lacks the minimum required knowledge of the core content of the course. Their ability to use specific language is minimal or nonexistent, and they are unable to independently apply acquired knowledge.
Cardiac surgery	
Endocrinology	
Applied pharmacology	
Anatomopathology	
Applied diagnostics	

Examples of common questions and/or exercises

Subject	Examples of common questions and/or exercises
Cardiovascular diseases	<ul style="list-style-type: none"> What is the clinical presentation of STEMI? How is ejection fraction used in heart failure classification? What are the criteria for anticoagulation in atrial fibrillation? How is aortic stenosis diagnosed? What are the main cardiovascular risk factors?
Vascular surgery	<ul style="list-style-type: none"> What are the treatment options for an abdominal aortic aneurysm? When is carotid endarterectomy indicated? How is acute limb ischemia diagnosed and managed? What are the complications of arteriovenous fistulas? What are clinical signs of chronic venous insufficiency?
Cardiac surgery	<ul style="list-style-type: none"> What are the main indications for CABG? What is the difference between mechanical and biological heart valves? How is an ascending aortic dissection surgically treated? What is the role of the heart-lung machine? What are common complications after cardiac surgery?

Endocrinology	<ul style="list-style-type: none"> • What are the typical signs and symptoms of hyperthyroidism? • How is adrenal insufficiency diagnosed? • What are the causes of hypercalcemia? • What are the diagnostic criteria for type 1 and type 2 diabetes? • Which hormones are secreted by the anterior pituitary?
Applied pharmacology	<ul style="list-style-type: none"> • What are the mechanisms of action of loop diuretics, and in which heart failure phenotypes are they indicated? • How do SGLT2 inhibitors improve outcomes in patients with diabetes and heart failure? • What are the risks of combining beta-blockers with non-dihydropyridine calcium channel blockers? • How do you titrate levothyroxine therapy, and what are the implications of under- or overtreatment? • What are the pharmacokinetic differences between direct oral anticoagulants and vitamin K antagonists?
Anatomopathology	<ul style="list-style-type: none"> • What are the histological stages of myocardial infarction, and how do they relate to time since onset? • How does atherosclerotic plaque instability appear under the microscope? • What are the morphological features of autoimmune thyroiditis? • How are endocrine tumors classified histologically, and what are the criteria for malignancy? • What is the typical appearance of diabetic nephropathy in kidney biopsy?
Applied diagnostics	<ul style="list-style-type: none"> • What are the typical radiological signs of cardiomegaly on chest X-ray? • When is CT angiography preferred over ultrasound for vascular imaging? • How does a “hot” thyroid nodule appear on scintigraphy? • What are the main indications for cardiac MRI? • Which imaging modality is used to evaluate adrenal incidentalomas?

Reference texts

Subject	Textbooks
Cardiovascular diseases	<ul style="list-style-type: none"> • Harrison's principles of internal medicine, 22nd edition. McGraw Hill. <p>Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.</p>
Vascular surgery	<p>Educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.</p>
Cardiac surgery	<p>Educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.</p>
Endocrinology	<ul style="list-style-type: none"> • Harrison's principles of internal medicine, 22nd edition. McGraw Hill. <p>Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.</p>
Applied pharmacology	<ul style="list-style-type: none"> • Katsung's Basic and Clinical Pharmacology, 16th edition, McGraw Hill • Goodman and Gilman's. The pharmacological basis of therapeutics, McGraw Hill

	Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.
Anatomopathology	Educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.
Applied diagnostics	<ul style="list-style-type: none"> Herring W. Learning Radiology. Elsevier Any additional educational material (slides, videos, handouts, etc.) will be distributed or indicated during the lessons.

Course format

Subject	Course format
Cardiovascular diseases	Teaching will be primarily delivered through in-person lectures, combining theoretical instruction with practical exercises. If teaching is conducted in blended or remote mode, appropriate adjustments will be made to ensure alignment with the objectives and content outlined in the Syllabus.
Vascular surgery	
Cardiac surgery	
Endocrinology	
Applied pharmacology	
Anatomopathology	
Applied diagnostics	

Attendance

Subject	Attendance
Cardiovascular diseases	Mandatory attendance.
Vascular surgery	
Cardiac surgery	
Endocrinology	
Applied pharmacology	
Anatomopathology	
Applied diagnostics	

Course schedule

Subject	Course schedule
Cardiovascular diseases	Students may refer to the recommended textbooks to identify the correspondence between the topics covered in the syllabus and the relevant chapters.
Vascular surgery	
Cardiac surgery	
Endocrinology	
Applied pharmacology	
Anatomopathology	
Applied diagnostics	