MEDICINE

Year/semester: second year, first semester
ECTS: 9
Course coordinator: Prof. Ana LLEO

INTEGRATED COURSE	MODULE	SSD	PROFESSOR (Milan office)	ECTS	HOURS
Medicine	Internal medicine	MED/09	**Lleo Ana*** Brunetta Enrico	4	60
	Clinical and Paediatric General Nursing Sciences	MED/45	Mandrini Sonia	3	45
	Clinical biochemistry and clinical molecular biology	BIO/12	Monari Marta Noemi	1	15
	Diagnostic imaging and radiotherapy	MED/36	Chiti Arturo Martina Sollini Ciro Franzese	1	15

COURSE OBJECTIVES:
The course aims to provide the student with the necessary knowledge to:

- describe the assessment approach used for evaluating the typical signs and symptoms of the main diseases of the cardiovascular, respiratory, renal and urinary, metabolic and gastrointestinal systems using the ABCDE approach.
- interpret the data collected and identify the main health issues and/or risks of the person suffering from cardiovascular, respiratory, renal and urinary, metabolic, gastrointestinal diseases using the ABCDE approach.
- define expected outcomes correlated and/or possibly correlated to identified disease-specific health issues and/or risks
- be able to choose and describe evidence-based treatment and preventive nursing interventions according to the characteristics of the person, the expected outcomes, the available resources
- know the biological principles and main applications of diagnostic imaging and

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radiotherapy methods. Recognise the possible risks to patients and health professionals from the use of ionising radiation and magnetic fields in medicine.

- verify the extent to which the objective has been achieved, the behaviour displayed by the user, and the reassessment of objectives and interventions

The course also aims to promote the development of interdisciplinary knowledge necessary to organise nursing activities that need to be carried out both on an individual level and in collaboration with other professionals within the health care team, using, where necessary, the work of support staff.

TEACHING METHODS: Lectures, guided discussions, plenary discussion, clinical case studies in collaboration with the course director, watching video-clips.

PREREQUISITES: access to the practical placement examination; access to the 3rd year of the course.

ASSESSMENT METHOD: written multiple-choice test and an oral examination for medicine and nursing contents.

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MODULE: MEDICINE MED/09

SUGGESTED READING:

- Brunner Suddarth. Infermieristica medico-chirurgica" di Janice L. Hinkle, Kerry H. Cheever.
- teaching material (slides)

CONTENT:

1. INTERNAL MEDICINE AND SEMIOTICS
   - understand the importance of anamnesis, physical examination and the clinical methodology essential in the approach to the patient.

2. CARDIOVASCULAR DISEASES

-BASIC ELECTROCARDIOGRAPHY: Principles of electrocardiography, Interpretation of an ECG.

- HEART FAILURE
  - pathophysiology of the cardiovascular system,
  - the mechanisms underlying heart failure,
  - clinical presentation
  - basic principles of therapy.
  - acute pulmonary oedema
- VALVULOPATHIES
  - pathophysiology of the cardiovascular system,
  - mechanisms underlying major heart valve disease
  - clinical presentation
- ACUTE CORONARY SYNDROME
  - pathophysiological mechanisms underlying ischaemic disease
  - recognise possible clinical presentations
  - understand the diagnostic and therapeutic pathway
  - management of patient
- MYOCARDITIS, ENDOCARDITIS AND PERICARDITIS
  - pathophysiology of myocarditis/endocarditis/pericarditis
  - know the possible clinical presentations
  - key diagnostic and therapeutic pathways.
- ARRHYTHMIA
  - main cardiac arrhythmias: atrial fibrillation, ventricular tachycardia
  - clinical presentation
  - related electrocardiographic alterations.
- HYPERTENSION
  - criteria for the diagnosis of hypertension and its classification;
  - main causes of high blood pressure and their frequency;
  - effects of hypertension on organs and tests useful to demonstrate complications;

2. KIDNEY DISEASES

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- ACUTE KIDNEY FAILURE
    - pathophysiology of the urinary apparatus
    - mechanisms underlying pre-renal, intrinsic renal and post-renal acute kidney failure.
- CHRONIC KIDNEY DISEASE
    - mechanisms underlying chronic kidney disease
    - laboratory tests that are essential in diagnosing diseases of the urinary system
- URINARY TRACT INFECTIONS
    - presentation of urinary tract infection
    - more correct therapeutic approach.

3. HAEMATOLOGICAL DISEASES
    - presence of anaemia and type of anaemia, polyglobulia, coagulation disorder and haemorrhagic risk.
    - most frequent causes and associated signs and symptoms
    - laboratory tests and diagnostic tests useful for studying patients with altered haematological function
    - signs and symptoms of urgency in a patient with anaemia;
    - principles of transfusion of blood components with particular attention to compatibility studies and potential complications.

4. ENDOCRINE-METABOLIC ALTERATIONS
    - main etiopathogenetic mechanisms of signs and symptoms related to pancreatic and thyroid pathology
    - the usefulness and limitations of diagnostic tests and how to prepare and perform them
- THYROID DISEASES
    - Anatomy
    - Laboratory and diagnostic tests
    - Hypothyroidism and thyrotoxicosis
    - Goiter
    - Thyroiditis
- DIABETES MELLITUS:
    - diagnosis, classification and pathophysiology, therapy and complications
    - Epidemiology
    - Notions of pathophysiology
    - Diagnostic criteria
    - Clinical manifestations
    - Complications
    - Medication therapy management (oral, insulin)

5. GASTROINTESTINAL AND LIVER DISEASES
    - main etiopathogenetic mechanisms of signs and symptoms of digestive tract disease

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- patient with abdominal pain, diarrhoea, digestive bleeding indicating their severity based on the patient history, physical examination and blood chemistry tests;

- OESOPHAGUS, STOMACH, INTESTINES
  - Peptic ulcer and related diseases
  - Intestinal infectious diseases: outlines of acute diarrhoeal infectious diseases and toxins, food, *Clostridium difficile* infection, including pseudomembranous colitis
  - Inflammatory bowel diseases: ulcerative colitis and Chron's disease
- LIVER: anatomy, physiology, diagnosis and therapy
  - Acute viral hepatitis,
  - Toxic and drug-induced hepatitis,
  - Chronic hepatitis, alcoholic hepatitis, hepatic steatosis,
  - Cirrhosis and its complications: ascites, oesophageal varices, hepatic encephalopathy
- GALLBLADDER AND BILIARY TRACT: anatomy and physiology, diseases of the gallbladder and biliary tract, diagnostic testing, treatment outline
- PANCREAS: Anatomy, physiology, diagnosis and treatment outline
  - Acute and chronic pancreatitis.

6. RESPIRATORY DISEASES

the causes and main pathophysiological mechanisms, and the characteristics of the clinical pictures most frequently associated with dyspnoea, cough, hemoptoe, chest pain, cyanosis, hypoxia, respiratory failure and chest pain, indicating their severity on the basis of the history and physical examination and haemogas analysis

- HAEMOGAS ANALYSIS
  - pathophysiology of acid/base balance
  - interpret a blood gas test.
- OBSTRUCTIVE PULMONARY DISEASES:
  - Chronic obstructive pulmonary disease (COPD): Epidemiology, diagnosis, functional assessment, radiological evaluation, classification, treatment outline;
  - Bronchial asthma: definition, pathophysiology, pathogenesis, classification, role of cellular mediators;
  - Bronchiectasis: definition, diagnostic tests, complications, management of the patient with bronchiectasis;
- PATHOLOGY OF PULMONARY INFECTION: Epidemiology, diagnosis, therapy, management (common viral respiratory infections, pneumonia, lung abscess, tuberculosis);
- PULMONARY THROMBOEMBOLISM (PTE): definition, diagnostic tests, complications, therapy and management of the patient with PTE;
- INTERSTITIAL LUNG DISEASE: pathophysiology, diagnostic tests, treatment outline;
- PLEURAL DISEASES: outline of pathology, management and therapy of pleural effusions;
- CHRONIC RESPIRATORY FAILURE
  - reminder of the anatomy and physiology of respiratory mechanics, definition, symptoms, respiratory exchanges, pathophysiology of the alveolar-capillary membrane, pathophysiology of the respiratory muscles, blood gas test, oximeter, oxygen therapy, clinical aspects and treatment outline.
  - main therapeutic measures for the patient with chronic respiratory failure

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MODULE: CLINICAL AND PAEDIATRIC GENERAL NURSING SCIENCES MED/45

SUGGESTED READING:

- Luisa Saiani & Anna Brugnolli, Trattato di Cure Infermieristiche, Vol.3, Casa editrice Idelson – Gnocchi, Sorbona, 2013
- Brunner Suddarth, Infermieristica medico-chirurgica: volumi 1 e 2
- Procedures and Protocols in ICH networks
- Documents per theme.

OBJECTIVE:

The aim of the course is to develop an integrated, multidisciplinary care approach centred on the patient and the family, at the various stages of the illness trajectory and how to intervene by always promoting health and using the therapeutic triad of pharmaceuticals, diet and physical activity.

Specifically, the student will be able to apply the head-to-toe diagnostic assessment for detecting priority health issues, while considering the clinical-nursing process assessment of the patient, care objectives, expected outcomes and the most appropriate interventions to solve them. This process is verified by an appropriate evaluation.

CONTENT

1. CLINICAL CARE MANAGEMENT OF PATIENT WITH DYSPNOEA
    - Assessment of the patient with dyspnoea (assessment protocol and “OPACS” (look, listen, feel, count and saturation))
    - Care objectives
    - Treatment of acute and chronic complications
    - Expected outcomes
    - Care interventions to activate self-care behaviours
    - Evaluation and reassessment.

2. OXYGEN THERAPY
    - Legal references
    - Administration aids
    - Care at home (user and caregiver needs)

3. CLINICAL CARE MANAGEMENT OF PATIENTS WITH RESPIRATORY DISEASES
    - Assessment of patients with asthma, pneumonia, pleural effusion (thoracentesis), stable and exacerbated COPD
    - Care objectives
    - Treatment of acute and chronic complications (introduction to the interpretation of blood gas analysis of clinical cases)
    - Expected outcomes
    - Care interventions to activate self-care behaviours (rehabilitation programme, facilitating adherence to treatment, factors that may hinder self-care behaviours)

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- Evaluation and revaluation
- Care at home (user and caregiver needs).

4. CLINICAL CARE MANAGEMENT DIABETES PATIENTS
   - Assessment of the patient with type 1 and type 2 diabetes, diabetic ketoacidosis and hypoglycaemia
   - Care objectives
   - Treatment of acute and chronic complications
   - Expected outcomes
   - Targeted care interventions to activate self-care behaviours
   - Evaluation and revaluation
   - Care at home (user and caregiver needs).

5. BASIC ELECTROCARDIOGRAPHY
   - Technique for performing the 12-lead electrocardiogram (ECG).
   - The basic concepts of monitoring the potentially worsening or unstable patient with the various equipment provided
   - Specialized diagnostic testing (Holter test and dynamic Holter ECG, echocardiogram, echo stress test, heart CT scan, heart MRI scan).

6. CLINICAL CARE MANAGEMENT OF PATIENTS WITH CARDIOVASCULAR DISEASE
   - Assessment of the cardiac patient with arrhythmia, cardiac syncope, PM and/or other device, (typical) chest pain, acute coronary syndrome (nursing of patient who is a candidate for coronarography and/or angioplasty), atrial fibrillation (OAC and NOAC therapy), stable and unstable cardiac decompensation (acute pulmonary oedema).
   - Care objectives
   - Treatment of acute and chronic complications (interpretation of electrocardiograms of various clinical cases)
   - Expected outcomes
   - Care interventions to activate self-care behaviours (rehabilitation programme, facilitating adherence to treatment, factors that may hinder self-care behaviours)
   - Evaluation and revaluation
   - Care at home (user and caregiver needs).

7. CLINICAL CARE MANAGEMENT OF PATIENTS WITH HIGH BLOOD PRESSURE
   - Assessment of the patient with hypertension
   - Care objectives
   - Treatment of acute and chronic complications
   - Expected outcomes
   - Care interventions to activate self-care behaviours (facilitating adherence to treatments)
   - Evaluation and reassessment.

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8. CLINICAL CARE MANAGEMENT OF PATIENTS WITH LIVER DISEASE

- Assessment of patients with liver failure, cirrhosis, jaundice, oesophageal varices, ascites, hyperammonaemia, malnutrition
- Care objectives
- Treatment of acute and chronic complications (paracentesis, liver biopsy)
- Expected outcomes
- Care interventions to activate self-care behaviours
- Evaluation and revaluation
- Care at home

9. CLINICAL CARE MANAGEMENT OF PATIENTS WITH KIDNEY DISEASE

- Assessment of patient with kidney disease, nephrotic syndrome, urinary tract infections
- Care objectives
- Treatment of acute and chronic complications (dialysis)
- Expected outcomes
- Care interventions to activate self-care behaviours (rehabilitation programme, facilitating adherence to treatment, factors that may hinder self-care behaviours)
- Evaluation and revaluation
- Care at home (user and caregiver needs).

10. CLINICAL CARE MANAGEMENT OF PATIENTS WITH DISEASES OF THE GASTROINTESTINAL SYSTEM

- Assessment of the patient with hiatal hernia, peptic ulcer, diverticula, pancreatitis, inflammatory bowel disease (Crohn's disease, ulcerative colitis)
- Care objectives
- Treatment of acute and chronic complications
- Expected outcomes
- Care interventions to activate self-care behaviours
- Evaluation and revaluation
- Care at home (user and caregiver needs).

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MODULE: CLINICAL BIOCHEMISTRY AND CLINICAL MOLECULAR BIOLOGY BIO/12

SUGGESTED READING: Material provided by the professor
LEARNING OBJECTIVES: understand the main laboratory tests useful in clinical practice.

CONTENT

1. VENOUS SAMPLING
   - Venous sampling what is needed for pre-analysis to guarantee results
   - understand the different types of sampling test tubes and how to choose them based on their characteristics
   - explain the main pre-analytical problems that may interfere with subsequent laboratory analysis
   - how to choose the tube type in relation to the test, how to ensure correct pre-analysis

2. INFLAMMATION
   - understand the main mechanisms involved in the acute and chronic inflammatory process
   - which laboratory tests can help understand the inflammatory process

3. BLOOD AND HAEMATOPOIETIC ORGANS
   - learn how to distinguish the main diseases related to white blood cells and red blood cells
   - relate the interpretation of laboratory results to clinical practice in order to assess the patient.

4. MAIN COAGULATION TESTS
   - understand the coagulation cascade and the tests available to study problems related to haemostasis and thrombotic risk
   - know the molecular events behind clot formation and the fibrinolytic system
   - understand the basics of the classification of haemostasis disorders, laboratory tests for patient assessment

5. THE HEART
   - laboratory tests that can be used in the evaluation of the myocardium
   - laboratory tests for the evaluation of myocardial ischaemia
   - tests for monitoring congestive heart failure

6. THE RESPIRATORY SYSTEM
   - the role of gases in the assessment of the patient with pulmonary disease
   - analysis of pleural effusion
   - the significance of bronchoalveolar lavage
   - tests that can be used to assess foetal lung maturity
   - venous and arterial blood gas

7. THE GASTROINTESTINAL TRACT AND AUTOIMMUNE DISEASES
   - laboratory tests for assessing patients with gastrointestinal disorders

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- laboratory tests for the diagnosis of an ulcer and Helicobacter pylori, coeliac disease and gluten intolerance

8. THE LIVER AND BILIARY TRACT
   - define liver function and its main related diseases.
   - include laboratory tests for viral hepatitis, cirrhosis, hepatocellular carcinoma, cholestasis of pregnancy etc.

9. THE PANCREAS
   - understand the normal functions of the organ and related pathologies
   - understand the differences between acute and chronic pancreatitis
   - diagnosis of diabetes, gestational diabetes and hypoglycaemia
   - tumour pathologies
   - understand laboratory test results

10. THE KIDNEY
    - understand kidney function and related diseases
    - laboratory parameters for kidney function such as creatinine, glomerular filtration rate, proteinuria, urinalysis, urinary stones and crystals, etc.

11. THE REPRODUCTIVE APPARATUS
    - male and female physiology and biochemistry and related pathologies
    - use of laboratory tests for the classification of pathologies related to the male and female reproductive system

12- THE ENDOCRINE SYSTEM
   - learn the biochemistry and physiology of the main hormones
   - understand the main laboratory tests for diagnosing the main disorders of the thyroid gland, the adrenal cortex, the adrenal medulla, the parathyroid glands

13- OVERVIEW OF TOXICOLOGY
   - understand key diagnostics for medical and forensic purposes
   - understand how to determine alcohol levels and monitor abuse over time and drug detection.
   - Overview on how to determine drug concentrations in blood

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MODULE: DIAGNOSTIC IMAGING AND RADIOTHERAPY MED/36

SUGGESTED READING: Material provided by the professor

OBJECTIVES:

The course aims to provide the fundamentals on:

- the main techniques of diagnostic imaging and radiotherapy;
- the main indications and contraindications for diagnostic imaging techniques, including the use of contrast agents and radiopharmaceuticals;
- the regulations on the use of ionising radiation and magnetic fields as set out in EU directives and Italian laws

CONTENT:

1. Know the effect of ionising radiation and on biological organisms
2. Know the principles and standards of radiation protection of workers
3. Know the principles and rules of radiation protection of patients
4. Know the general principles of imaging techniques for diagnostic purposes using ionising radiation, ultrasound, magnetic fields and radiofrequencies
5. Know the indications and contraindications of diagnostic imaging tests
6. Know the indications and contraindications for the use of contrast media
7. Recognise an allergic reaction to contrast medium or radiopharmaceuticals and know the principles of treatment
8. Know the main techniques of interventional radiology and the indications and contraindications to the different procedures
9. Know the general principles of radiotherapy techniques
10. Know the types of adverse events that can occur in the departments of Radiodiagnosis, Nuclear Medicine and Radiotherapy

PROGRAMME:

- Physics bases, principles of radiobiology
- Radiation protection for workers
- Radiodiagnosis: indications and contraindications for diagnostic and interventional procedures; radiation protection of patients
- Nuclear Medicine: indications and contraindications for diagnostic and interventional procedures; radiation protection of patients
- Radiotherapy: indications and contraindications for therapeutic procedures; radiation protection of patients

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