

BSc IN PHYSIOTHERAPY

INTEGRATED COURSE TITLE: PEDIATRIC CLINICAL SCIENCES

NUMBER OF ECTS CREDITS: 7

SSD: MEDS-19/A, MEDS-20/A, MEDS-20/B, MEDS-26/B

MODULE COORDINATOR: PROF. MICHELE SORRENTINO

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MODULE: APPLIED TECHNICAL AND MEDICAL SCIENCES

NUMBER OF ECTS CREDITS: 2

SSD: MEDS-26/B

PROFESSOR: [Federico Santarelli](#)

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MODULE : GENERAL AND SPECIALISED PEDIATRICS

NUMBER OF ECTS CREDITS: 2

SSD: MEDS-20/A

PROFESSOR: [Cinzia Auriti](#)

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MODULE : LOCOMOTIVE SYSTEM DISEASES

NUMBER OF ECTS CREDITS: 1

SSD: MEDS-19/A

PROFESSOR: Matteo Guzzini

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MODULE : PEDIATRIC NEUROPSYCHIATRY

NUMBER OF ECTS CREDITS: 2

SSD: MEDS-20/B

PROFESSOR : [Michele Sorrentino](#)

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PREREQUISITES

Although there are no mandatory prerequisites, in order to understand and be able to apply the topics covered in the integrated course from a professional point of view, it is necessary to have adequate knowledge of biochemistry, applied biology, medical genetics, human anatomy, histology, physiology, microbiology, general pathology, applied physics, information technology and data processing systems.

LEARNING OBJECTIVES

The course aims to achieve an adequate knowledge of the following topics as fundamental objectives:

- technologies of diagnostic imaging currently available
- technical and practical, radioprotection aspects and precautions necessary in the



pediatric age for the implementation of radiological practices to support the rehabilitation process

- appropriate use of radiological imaging
- physiology of neonatal and pediatric age
- most important pathologies of neonatal and pediatric age
- prenatal and neonatal care
- promotion of breastfeeding
- prevention of neonatal and pediatric injuries
- most important and frequent pathologies in pediatric orthopaedics
- assessment methods and tools for evaluating children hospitalized in orthopedic surgery departments
- management, protocols and applications in the various rehabilitation steps before and after trauma and/or surgery
- classification and definition of the most frequently diagnosed pediatric neuropsychiatric disorders in clinical practice
- neuroanatomical and pathophysiological mechanisms responsible of pediatric neuropsychiatric disorders
- adequate clinical approach to manage pediatric neuropsychiatric disorders in rehabilitation clinical settings

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LEARNING OUTCOMES

Knowledge and Understanding

At the end of this course the student will be able to:

- know technologies, equipment (and its components), dedicated instrumentation and diagnostic techniques used in the field of diagnostic imaging
- know principles and methods of correct functioning of the same and the criteria of correctness of the techniques performed
- know how to provide services according to the most common diagnostic / therapeutic protocols
- know the main aspects of radiation protection
- know every aspect and measure suitable for pediatric patients
- know the inspiring principles of health protection of patients in the evolutionary age
- know the organization of hospital levels of perinatal care
- know the organization of health professionals team, engaged in support of newborn-mother dyad
- know how to classify a newborn on the basis of weight and gestational age
- know the steps of perinatal care of physiologic, pathologic and preterm newborn in the delivery room
- know how to define and classify neonatal asphyxia
- know the basics of most important pathologies of preterm newborn
- know the principles and basics of neonatal infections
- know the principles and basics of neonatal hematology



- know the promotion strategies of breastfeeding
- know the basic diagnostic tools of exanthematous diseases in pediatric age
- know the vaccinations timetable, according to Italian law
- know how to organize a weaning schedule
- know the main steps of puberal development
- know basic principles and definition of the main visual defects in pediatric age
- know the basic principles of coeliac disease, gastro-esophageal reflux, congenital hip luxation
- know the main accidents and injuries of developmental age, and define prevention strategies
- know the pathologies of pediatric orthopedics described
- know the clinical and instrumental diagnostic criteria
- know the most commonly used treatment options
- know the possible mobilizations in the immediate post-trauma / surgery
- know how to produce a short-term and long-term rehabilitation therapy program
- know the alarm criteria for the recognition of post-trauma / surgery complications
- explain the peculiar physiological mechanisms underlying some pathologies characteristic of the pediatric age
- know the pediatric neuropsychiatric disorders described (epidemiology, etiopathogenesis, clinical picture, course, treatment)
- know the clinical diagnostic criteria of the pediatric neuropsychiatric disorders
- know the essential elements of the clinical-instrumental diagnostic process of the main pediatric neuropsychiatric disorders
- know the main rehabilitation approaches to pediatric neuropsychiatric disorders.

Applying knowledge and understanding

At the end of this course the student will be able to:

- use consciously equipments and methodologies, in order to provide the services correctly, in compliance with the radioprotection and safety principles, as well as in compliance with clinical risk policies
- apply the acquired knowledge to correctly identify and define a pediatric, orthopedic or neuropsychiatric disorder in its essential diagnostic, therapeutic and prognostic aspects
- use the knowledge acquired to independently investigate the aspects related to the specific field in which the student will be involved in his professional activity
- cooperate with other healthcare professionals in multidisciplinary and multiprofessional teams to make decisions regarding diagnosis, treatment and monitoring of the patient's condition in order to improve clinical outcomes and reduce costs.

Communication skills

At the end of this course the student will be able to:

- use properly specific scientific terminology
- describe correctly the clinical history and the epidemiological, etiopathogenetic, clinical and therapeutic-rehabilitative aspects of the pediatric disorders described;



- adequately communicate with other healthcare professionals in multidisciplinary and multiprofessional teams, with patients and parents to prepare them for the therapeutic-rehabilitative process.

Making judgements

At the end of this course the student will be able to:

- provide a rough but accurate and rational assessment, concerning the anatomical, pathophysiological, functional, clinical, prognostic and rehabilitative aspects of the child neuropsychiatric disorders described.

Learning skills

The student will have acquired skills and learning methods suitable for deepening and improving their knowledge and skills in the subjects covered by integrated teaching, also through consultation of scientific literature.

COURSE SYLLABUS

Applied Technical and Medical Sciences

- Introduction to radiodiagnostic imaging: general information and definition of investigation techniques;
- 2. Organization of a diagnostic department for images and pediatric aspects;
- 3. Radiation protection, legal and medico-legal aspects, current legislation regarding protection from ionizing radiation;
- 4. Traditional radiology, contrast and digital radiological techniques
- 5. Tomographic technologies: CT and MRI
- 6. Nuclear medicine and molecular imaging
- 7. Interventional radiology
- 8. Ultrasound
- 9. Image processing (RIS / PACS) and Post processing
- 10. Emergency / urgent radiographic investigations;
- 11. Correctness criteria in the execution of a radiographic study;
- 12. Diagnostic imaging in the main pathologies of pediatric and developmental age: examples and experiences
- Seminar: "Diagnostic images in the pediatric field".

General and Specialised Pediatric

Introduction to Pediatrics: neonatal and pediatric age – prenatal development and adaptations to extrauterine life – classification of newborn: weight, gestational age, growth curves - newborn care in delivery room; Apgar score – first care of the newborn infant – neonatal resuscitation: respiratory, circulatory and metabolic - meconium aspiration syndrome - prenatal infections, TORCH diseases and congenital Syphilis; prevention of neonatal congenital infections – postnatal early and late infections: sepsis and meningitis – bilirubin metabolism: neonatal physiologic and pathologic jaundice – weaning and feeding in pediatric ages – mandatory vaccinations and infectious diseases – major congenital heart disease - gastro-intestinal pathologies: coeliac disease – gastro-



esophageal reflux, hypertrophic stenosis of pylorus – eye and ear's defects in pediatric age – child birth injuries - accidents and injuries in pediatric age: classification and prevention strategies.

Locomotive System Diseases

- Principles of physiology of the locomotor apparatus in children
- Fractures typical of the pediatric age
- Orthopedic pathologies of the pediatric age: epidemiology, treatment options, rehabilitation management
- Diagnosis, treatment and rehabilitation pathways of the child with scoliosis
- Possible complications of orthopedic treatment with plaster in children
- Management of communication with parents and with the child
- The role of the physiotherapist in the pediatric orthopedic surgery department
- orthopedic surgery, use of orthoses, rehabilitation
- Flatfoot
- Pediatric sports traumatology
- Spondylolysis and spondylolisthesis: diagnosis, treatment and rehabilitation
- Rehabilitation routes in the aquatic environment.

Pediatric Neuropsychiatry

Principles of pathophysiology of the central and peripheral nervous system.

Clinical history in child neuropsychiatry.

Risk factors in childhood and adolescent neuropsychiatry.

Childhood neuropsychiatric e neurological semeiotics.

Neurological and neurodevelopmental examination of newborn and infant.

Psychomotor developmental milestones.

Assessment and diagnostic tools in child neuropsychiatry.

Neurodevelopmental disorders (Intellectual Disability, Communication Disorders, Autism Spectrum Disorder, ADHD, Specific Learning Disorder, Motor Disorders).

Brief overview of Neonatal Neurology. Neurocutaneous Syndromes, Genetic Anomalies and Dysmorphic Syndromes (i.e. Down, Edward, Klinefelter, Turner, Fragile-X, Rett, Prader-Willi, Angelman etc.).

Metabolic and Heredodegenerative diseases. Brief notes on the main pediatric CNS Tumors. Epilepsies. Cerebral Palsy. Movement disorders. Diseases of Motor Unit (myopathies, neuropathies etc.).

Brief overview of the main psychiatric disorders in childhood and adolescence (externalizing disorders, mood disorders, anxiety disorders, obsessive-compulsive disorder etc.).

COURSE STRUCTURE

The course is organized in 70 hours of frontal lessons, divided into 2, 3 or 4 hours according to academic year timetable (first semester). Frontal teaching will include slides and video



projections, interactive discussion of paradigmatic clinical cases and possibly supplementary seminars on the topics covered during the course. Students will be free of doing verbal interventions during the lessons, in order to deal with one another and stimulate discussion in the group. Attendance at lessons is mandatory for at least 75% of the total lesson hours of the integrated course.

COURSE GRADE DETERMINATION

The students' preparation will be verified through a written test for "General and Specialized Pediatrics" and "Applied Technical and Medical Sciences" modules, and through an oral test for "Locomotive Diseases" and "Pediatric Neuropsychiatry" modules.

General and Specialized Pediatrics: the exam includes a questionnaire made up of 33 multiple choice questions; 1 point will be awarded for each correct answer. The test is considered passed by obtaining a score equal to or higher than 24/30. With a score of 33 the test is considered passed with 30 cum laude. A score of less than 16 points indicates failure to pass the exam, without the possibility of recovery.

For students who obtain a written score between 16 and 23, upon request, there is the possibility of an oral interview, to pass the exam.

Applied Technical and Medical Sciences: the exam includes a questionnaire made up of 33 multiple choice questions; 1 point will be awarded for each correct answer. The test is considered passed by obtaining a score equal to or higher than 18/30. With a score between 16 and 18/30 the student can take an oral test to pass the exam. With a score lower than 16/30 the test is considered not passed.

"Locomotive Diseases" and "Pediatric Neuropsychiatry": During the oral test the examining commission will evaluate the student's knowledge and understanding of the topics covered, his ability to correctly apply and present the knowledge acquired during the integrated course, the communication skills and independent judgement, as indicated in the Dublin descriptors.

The result will be determined by the average of the marks obtained in the various tests.

OPTIONAL ACTIVITIES

In addition to the didactic activity, the students will be given the opportunity to have office hours with the professors of the integrated course to deepen or clarify their knowledge on any topic described. Students are received after booking an appointment by email.

READING MATERIALS

APPLIED TECHNICAL AND MEDICAL SCIENCES

- Imaging in Pediatrics - Authors: A. Carlson Merrow, Jr. Selena Hariharan – publisher Elsevier 2017
<https://www.elsevier.com/books/T/A/9780323477789> [with italian version]



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- Caffey's Pediatric Diagnostic Imaging – Authors: Coley, Brian D – publisher Elsevier
- Imaging for Pediatricians: 100 Key Cases – Authors: María I. Martínez-León, Antonio Martínez-Valverde, Luisa Ceres-Ruiz, publisher Springer
- Consultation of journals and scientific articles / papers and online resources:
for example: Pediatric Radiology, publisher Springer
<https://www.springer.com/journal/247>
- Consultation of documents and free resources produced by the European scientific societies of radiology, nuclear medicine, radiotherapy Guidelines & Recommendations
for example:
European Society of Radiology
<https://www.myesr.org/publications/guidelines-and-recommendations>,
European Association of Nuclear Medicine (EANM)
<https://www.eanm.org/publications/technologists-guide/>

GENERAL AND SPECIALIZED PEDIATRICS

- Nelson Textbook of Pediatrics, 2-Volume Set, 21st Edition
- Fanaroff & Martin's: Neonatal and Perinatal Medicine 10th Edition

LOCOMOTIVE SYSTEM DISEASES

- Mark D. Miller & Jennifer Hart & John M. MacKnight. Essential Orthopaedics, 2nd Edition, Elsevier
- Raymond T. Morrissy, Stuart L. Weinstein. Atlas of Pediatric Orthopaedic Surgery. Lippincott Williams and Wilkins

PEDIATRIC NEUROPSYCHIATRY

- Teaching and learning materials provided by the professors during the course.

For those who wish to deepen specific aspects:

Pediatric Neurology

- Swaiman KF Ashwal S Ferriero DM et al. Swaiman's Pediatric Neurology: Principles and Practice. Sixth ed. Edinburgh: Elsevier; 2018.
- Arzimanoglou A O'Hare A Johnston MV Ouvrier RA. Aicardi's Diseases of the Nervous System in Childhood. Fourth ed. London: Mac Keith Press; 2018.

Child and Adolescent Psychiatry

- Martin Andrés Bloch M Volkmar FR. Lewis's Child and Adolescent Psychiatry: A Comprehensive Textbook. Fifth ed. Philadelphia: Wolters Kluwer; 2018.
- Thapar A Rutter M. Rutter's Child and Adolescent Psychiatry. Sixth ed. Chichester West Sussex: Wiley Blackwell; 2018.