

Course	Study year (semester)	Theory	Tutorial classes
Molecular and cellular biology, histology and anatomy (10h)	1 (S1)	<p>Develop an integrated vision of the levels of organization from cell to organism. Appropriate basic knowledge in molecular and cellular biology. Acquire notions of general anatomy. Know the general anatomy of the visual system</p>	<p>Molecular biology            Biomolecules, notions of bioenergetics, basic notions of metabolism and genome.            Cellular biology .            The cell and tissues and the organisation of apparatus and systems.            Basic knowledge of the cell.            Plasma membrane and trans-membrane transport -            Endomembrane system and intracellular trafficking -            Cytoskeleton - Mitochondria and peroxisomes -            Structure and functional organisation of the cell nucleus -            Extracellular matrix.            Cellular life: division - proliferation - differentiation - apoptosis.            Genetic concepts.            Chromosomes and karyotype.            Basics of heredity.            General histology .</p>

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			<p>Basic tissues, epithelia and connective tissues, nerve tissues, muscle tissues.            Anatomy Principles of general anatomy.            Anatomy of the head and neck.            Anatomy of the eyeball.            Orbital anatomy.            Anatomy of the visual pathways.            Anatomy of the oculo-motor muscles and nerves.            Basic anatomy of the locomotor system.            Histology and embryology of the oculo-orbital structures.</p>
<p><b>Geometrical optics, physiological optics (54h)</b></p>	<p>1 (S1)</p>	<p>Describe the laws of geometric optics and the propagation of light in different optical systems (stigmatism, reflection, refraction by diopters, lenses or prisms).</p>	<p>Laws of optics and geometrical optics            Huygens-Fresnel and Fermat's principle.            Rectilinear propagation of light.            Descartes' relation (refraction, reflection) and Malus' theorem.            Image of a point in an optical system Rigorous and approximate stigmatism.            Real and virtual objects and images. Reflection, plane and spherical mirrors Image of a plane object.            Association of 2 plane mirrors.            Rigorous and approximate stigmatism of 2 plane mirrors.            Refraction Planar diopter and parallel face blade.            Spherical diopters.            Centred systems.            Thin lenses.            Prisms.            Radiometry Spectral quantities.</p>

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			<p>Light sources.            Flux, intensity, luminance, illuminance.            Spectral sensitivity to the eye.            Aberration Definition and classification and notion of geometric aberration.            Interference, polarisation.            Limits of resolution.            Notions of ametropia, notion of emmetropia Hypermetropia, myopia, astigmatism, presbyopia.            Physiological optics Retinal receptors and phototransduction.            Accommodation and convergence.            Synergy accommodation convergence.            Punctum proximum and punctum remotum.</p>
<p><b>Physiology of the visual system, neuro-sensory physiology (21h)</b></p>	<p>1 (S1)</p>	<p>Explore all the structures involved in the development of visual function, from the eye, the visual pathways, subcortical and cortical structures and explain the importance of their connections in visual and sensorimotor development.            Identify the role of other systems in the development of visual function such as the vestibular pathways and centers.            Show the importance of the interactions of these systems in the establishment and development of visual function.            Study the development of visual function.            Acquire the notions of balance regulation and its multisensory control.</p>	<p>The pathway of visual stimulation will be explored from the starting point, the retina, to its integration at the cortical level:</p> <ul style="list-style-type: none"> <li>- the role of the lens in the accommodation process ;</li> <li>- role of intrinsic motority, action of the ciliary muscle in the accommodation process;</li> <li>- macular maturation and ON-OFF cellular responses;</li> <li>- the different X and Y cellular responses;</li> <li>- the geniculostriate system, the chiasm, the retrochiasmatic pathways, their organisation, basis of binocular vision;</li> </ul>

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			<ul style="list-style-type: none"> <li>- the cortical visual centres, the lateral geniculate nucleus, the visual cortex with the reception and integration areas involved in the visual process;</li> <li>- the architecture of the cortex, the different receptor layers, the organisation into dominance and orientation columns;</li> <li>- the midbrain or subcortical system as a whole</li> </ul> <p>The role of each in the establishment of the visual process;</p> <ul style="list-style-type: none"> <li>- visual development and congenital anomalies of the oculo-neuro-sensory system;</li> <li>- anatomical maturation, retina, optic pathways, cortical centres, subcortical centres;</li> <li>- physiological maturation, the notion of critical and sensitive periods and plasticity;</li> <li>- functional development</li> <li>- the importance of subcortical links, as well as relations with other systems (pyramidal, extrapyramidal, lemniscal, extralemniscal, vestibulospinal systems); vestibular pathways and centres;</li> <li>- central regulation and multi-sensory control of posture</li> <li>- postural referentials</li> </ul>

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			<p>- somesthesia, proprioception, stomatognathic apparatus, audio-vestibular system, role, damage and consequences</p> <p>- rachis and posture: anomalies of the statics, postural tonus and its dysfunctions...</p>
<p><b>Monocular vision, visual acuities and their anomalies (12h)</b></p>	<p>1 (S1)</p>	<p>Know the physiological bases of monocular vision and know how to define the different physiological types of visual acuity (and their interest).            Know the physiological elements that influence the degree of visual acuity.            Know how to recognize and measure ametropia.            To have notions allowing to recognize certain ophthalmological pathologies with visual deficit.</p>	<p>Reminder of monocular vision.            Definition of the different physiological types of visual acuity.            Physiology of visual acuity and its variations according to lighting, luminance, examination conditions, contrast, age, pupillary diameter, colours.            Influence of ametropias. Visual acuity at close range.            Measurement of distance and near visual acuity in children and adults.            The different types of tests and their scales. (contrast).            Presentation conditions (distance, group or isolated optotypes):            - at pre-verbal age: optokinetic nystagmus, visual evoked potentials, preferential gaze.            - at verbal age: geometric tests, directional tests, image tests, letter or number tests.            Ophthalmological pathologies with visual deficit.</p>
<p><b>Anatomy and histology of the oculomotor system and of the vision (8h)</b></p>	<p>1 (S1)</p>	<p>Explain a vision of the general organization of devices and systems that come into play in visual function as well as their gradual implementation.            Describe the different structures of the sensorimotor apparatus and the visual system, their anatomy and physiology as well as their development.            Define the levels of organization of both the sensorimotor and visual apparatus and their interrelationships.</p>	<p>Anatomy and histology, muscles, pathways, innervation, actions and fields of action, normal eye movements and laws of motricity.            Anatomy and histology of the orbital apparatus with its integration in the face.</p>

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		<p>Deduce the harmful effects of any deregulation in the establishment or development of these functions Identify the clinical signs, the risks, the possibilities of treatment</p>	<p>Anatomy of vision, description and maturation of the receptor elements, retina, macula, visual pathways, subcortical and cortical visual centres and those involved in visual resolution or acuity. Developmental embryology and establishment of binocular vision, normal retinal-cortical correspondences, sensory and motor matching in all directions of space, and stereoscopic vision including maturation stages. Establishment of the accommodation-convergence's coordination, essential for normal binocular vision. Examination techniques and various tests applied to the understanding of the anatomy of the visual pathways.</p>
<p><b>Physiopathology of the oculomotor system and binocular vision (51h)</b></p>	<p>1 (S1)</p>	<p>Know the devices and systems which come into play in the physiology of oculomotricity and binocular vision as well as their development. Define interactions with the development of visual function. Deduce the harmful effects of any disruption in the establishment or development of these functions.</p>	<p>Physiology of the extrinsic musculature Physiology of the extrinsic musculature and its role in the visual process and the establishment of the accommodation-convergence synergy. Study of normal eye movements, conjugated motor function, optokinetic nystagmus. Methods of exploration of motricity and examination techniques. Physiology of binocular vision. Definition, conditions necessary for its establishment. Notion of horopter. Organisation of visual projections. Organisation and representation of space around the macular reference point or retinotopy at the cortical and subcortical centres.</p>

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			<p>Columnar cortical organisation and binocular interactions.            Essential data for the establishment of normal binocular vision: normal retinal-cortical correspondences (or CRN) leading to motor and sensory matching allowing simple vision in all directions in space.            Characteristics of the visual field.            Methods and tests for exploring binocular vision.</p>
<p><b>Physiopathology of ocular motricity and binocular vision (17.5h)</b></p>	<p>1 (S1)</p>	<p>To understand the anomalies and the consequences due to a deviation of the visual axes.            To understand the pathophysiology of a deviation of the paralytic type and of the strabismic type and to know the various pathologies which are attached to it.</p>	<p>Definition of the phenomena linked to a disorganisation of space by deviation of the visual axes.            Study of the physiopathology of a paralytic type deviation.            Study of the pathophysiology of a strabismic type of deviation.            Diplopia and confusion are replaced by 2 pathological mechanisms: suppression and abnormal retinocortical correspondence (ARC).            Study of the changes in spatial references in the period of cortical plasticity in children, the abnormal retinocortical correspondence CRA, the harmonious retinocortical correspondence CRAH.            Notions of objective and subjective angle.            Study of oculomotricity imbalances: anomalies of conjugated motor function, optokinetic nystagmus.            Classification of oculomotor imbalances.            Examination methods are discussed in each case.</p>
<p><b>General and ophthalmologic pathologies (8h)</b></p>	<p>1 (S1)</p>	<p>Know the different ophthalmological pathologies except neuro-ophthalmological pathologies.            To be able to judge their seriousness and possibly the urgency of an ophthalmological intervention.</p>	<p>Red eye            - painful: keratitis, uveitis, acute glaucoma, episcleritis foreign body ;            - non-painful, conjunctivitis, subconjunctival haemorrhage;            Anterior segment pathologies :</p>

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		<p>To know the various general pathologies having ophthalmological manifestations in adults and in children, their evolution according to the general context and the related functional explorations</p>	<p>Glaucoma            Uveitis, ocular surface...            Cataracts in children and adults.            Pathologies of the posterior segment:            Retina (detachment, retinopathies, AMD), vitreous, choroid...            Exophthalmos            Eyelids: Ptosis, Blepharitis, Chalazion...            Ocular trauma: corneal ulcers, burns, globe wounds, contusions.            General pathologies :            Eye, rheumatism and collagenosis.            Infectious diseases: rubella, toxoplasmosis, shingles, herpes, tuberculosis, STDs.            Endocrine diseases: diabetes, hyperthyroidism.            Eye and tumour: melanoma of the choroid.            Hypertension, headaches.            Exogenous and iatrogenic intoxications.</p>
<p><b>English (10h)</b></p>	<p>1-2-3 (S1)</p>	<p>Read and study professional articles in English.            Write the abstract of your final thesis in English.            Communicate in English to maintain a relationship with the person being treated</p>	<p>Professional vocabulary and grammar.            Oral communication in the field of health and care.            Reading and translation of professional articles and technical or procedural sheets.</p>
<p><b>Deontology and ethics: history of the profession (6h)</b></p>	<p>1 (S1)</p>	<p>Know the history of orthoptics, ophthalmology, optics.            Understand the organization of initial orthoptic training.            Know the field of intervention of the orthoptist compared to that of other health professionals. Define the concepts of deontology, legislation, ethics.</p>	<p>1. The scientific and epistemological approach, history of the health sciences :            - the health professions: history, field of intervention of the various health professionals            - notions of history in the field of vision and the great names that have participated in its evolution.</p>



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			<p>2. History of the orthoptic profession:</p> <ul style="list-style-type: none"> <li>- fields of activity</li> <li>- fields and evolution of skills</li> <li>- evolution of the practice and its different modes.</li> </ul> <p>3. Concepts and notions of deontology, legislation and ethics</p> <ul style="list-style-type: none"> <li>- regulatory developments</li> <li>- professional practice and responsibility</li> <li>- human rights, patients' rights</li> <li>- confidentiality, professional secrecy</li> <li>- concepts in philosophy and ethics: - man, freedom, humanity, otherness, dignity, vulnerability, social identity and recognition ethics, morality, deontology, responsibility, dilemma, conflict, consensus</li> <li>- respect, integrity, commitment, word given, powerlessness</li> <li>- norms, values</li> </ul>
Refraction (23h)	1 (S1)	<p>Know the optical defects and their mode of correction. Learn refraction techniques in adults and children. Describe ametropia, apparatus and methods of objective measurement. Know the eye drops used for refraction and their mode of action.</p>	<p>The basis of all ophthalmic and orthoptic examinations must start with a refraction measurement and the technique has to be mastered.</p> <p>Use of auto-refractometers and understanding their operation and usefulness.</p> <p>Practice retinoscopy. Learn how to correct myopia, hyperopia and astigmatism in children and adults.</p> <p>Master the various methods of correcting ametropia and anisometropia (corrective lenses, contact lenses).</p> <p>Know the indications of cycloplegia and its technique (use of eye drops, indications, dosage-posology, contraindications).</p> <p>Know the principles of refractive surgery.</p>

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			<p>Measuring devices Objective refraction. Cycloplegia. Refractometer. Retinoscopy (principle, methods, change of axis). Particularity of refraction in infants and children. Subjective refraction. Fog method. Jackson's cross cylinder. Duochrome test. Equalization and bi ocular and binocular balance</p>
<p>Orthoptical care of neuro-ophthalmological pathologies (19h)</p>	<p>2 (S1)</p>	<p>Carry out orthoptic rehabilitation according to the care plan finalized during the assessment. Know how to apply orthoptic rehabilitation methods. Inform the patient and / or the entourage, the ophthalmologist or other prescribing doctor</p>	<p>Specific applications and deepening of the previous knowledge concerning the orthoptic assessment. Identification of clinical signs and dysfunctions secondary to these pathologies. Differential orthoptic diagnosis: contributing complementary examinations and care plan. Complementary examinations Specific applications of the tests necessary for these pathologies. Rehabilitation Choice of orthoptic parameters and techniques adapted to the care of the visual dysfunctions caused. Construction and conduct of a rehabilitation programme according to the clinical signs and complaints of the patient, in relation with the ophthalmologist and the other members of the multi-professional team Informing the patient and/or his/her family about his/her dysfunctions, incapacities and deficits, about the therapeutic possibilities (re-education, rehabilitation or compensation) and their limits.</p>

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			<p>Adaptation to the level of understanding of the patient and/or his or her entourage and taking into account the levels of receptivity, adherence and motivation. Verbal and non-verbal communication with the patient, taking into account possible alterations in the relationship.</p> <p>Consideration of co-morbidity.</p> <p>Development of sensory and/or cognitive compensations.</p> <p>Professional cooperation</p> <p>Communication with the multi-professional team.</p> <p>Drafting and transmission of reports.</p>
<p><b>Care of functional amblyopia (12.5h)</b></p>	<p>2 (S1)</p>	<p>Know and master the examinations and tests necessary to situate the patient in relation to the nature of amblyopia.</p> <p>Know the functional explorations supplementing the orthoptic assessment.</p> <p>Establish an orthoptic diagnosis and a care plan, send it to the ophthalmologist or other prescribing doctor and to the patient.</p> <p>Know how to apply orthoptic rehabilitation methods according to the age and nature of the amblyopia.</p> <p>Carry out orthoptic rehabilitation according to the care plan finalized during the assessment.</p> <p>Inform and involve the patient and / or family and friends throughout the treatment.</p> <p>Know how to redirect the patient to the ophthalmologist in the event of an insufficient result</p>	<p>Assessment; Specific applications and deepening of previous knowledge concerning the orthoptic assessment.</p> <p>Application of specific tests to amblyopia</p> <p>Precise measurement of visual acuity according to the patient's aptitude and age.</p> <p>Verification of fixation, refraction and optical correction.</p> <p>Supplementary examinations according to the ophthalmologist's prescription.</p> <p>Orthoptic diagnosis, care plan and objectives.</p> <p>Explanation to the patient and/or family of the repercussions of this pathology, the constraints and limits of rehabilitation.</p> <p>Report to the ophthalmologist and/or the prescriber and/or the patient.</p> <p>Rehabilitation</p> <p>Importance of the consent and motivation of the patient and/or family, especially the role of parents.</p>

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			<p>Adaptation of rehabilitation according to the characteristics of the pathology, the abilities, the age of the patient and the stage of treatment.</p> <p>Inclusion of vision sensory, motor and functional axes in the rehabilitation.</p> <p>Mastery of the orthoptic techniques : total , partial , intermittent occlusion, optical penalisation, filtering, medication...</p> <p>Intermediate orthoptic assessment required to evaluate the effectiveness of the orthoptic rehabilitation.</p> <p>Follow-up and consolidation of orthoptic treatment.</p> <p>Relevance of continuing orthoptic treatment, need for referral to an ophthalmologist</p>
<p><b>Neuro-ophthalmological pathologies (19h)</b></p>	<p>2 (S1)</p>	<p>Know the main pathologies in neuro-ophthalmology.</p> <p>Identify additional contributing examinations from an orthoptic diagnosis.</p>	<p>Neuro-ophthalmological pathologies.</p> <p>Oculomotor paralysis: neurogenic, myogenic, traumatic.</p> <p>Supra-nuclear and functional paralysis.</p> <p>Congenital nystagmus. Nystagmus associated with strabismus.</p> <p>Acquired nystagmus in adults.</p> <p>Optic neuropathies (ischaemic, inflammatory...)</p> <p>Pathologies of the optic pathways: damage to the visual field.</p> <p>Hemineglect, cortical blindness, visual agnosia.</p> <p>Pupillary disorders.</p> <p>General pathologies with neuroophthalmological consequences: systemic diseases, stroke, Parkinson's, Alzheimer's, epilepsy, intracranial hypertension</p>

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Functional amblyopia and visual deprivation phenomenon (13h)	2 (S1)	<p>Define and differentiate amblyopia: functional, organic, mixed.            Know the etiologies of functional amblyopia and their classification.            Know the different types of treatment. Know the phenomenon of visual deprivation</p>	<p>Study of the aetiology of amblyopia.            Experimental studies concerning amblyopia.            Specific methods for measuring visual acuity.            Different forms of amblyopia and combination            Determination of the organic and functional part in mixed amblyopia, reassessment of the nature of the amblyopia in the event of failure of treatment (even partial)            Visual deprivation phenomenon.            Special cases: eccentric fixation, Beauvieu syndrome, myopic heavy eye, monophthalmic syndrome...            Criteria for treatment: depth of amblyopia, type of amblyopia, age of the patient...            The different types of treatment.</p>
Communication, therapeutic education (8h)	2 (S1)	<p>In connection with the mission of the orthoptist and that of the various actors involved in the care of patients, acquire communication methods allowing:</p> <ul style="list-style-type: none"> <li>- to establish and maintain verbal or non-verbal communication, taking into account their deficiencies in the relationship</li> <li>- seek the patient's consent;</li> <li>- to refer to other professionals in order to ensure the continuity of care</li> <li>- to transmit the relevant information to the various actors by appropriate means while respecting the continuity of care and with appropriate terminology</li> <li>- to carry out a therapeutic education approach, possibly in interdisciplinarity.</li> </ul>	<p>Communication with the patient and the different actors: relevant information to be transmitted to the patient and/or the family, to the different interlocutors within the framework of multidisciplinarity to ensure continuity of care and coordination between professionals.            Legal aspects concerning interprofessional communication.            Elaboration and drafting of overview documents and data transmission.            Elaboration of documents accompanying requests for compensation, material and financial assistance or particular situations (family, social, etc.).            Participation in the formalisation of reintegration projects, school and/or socio-professional projects according to the</p>

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			<p>patient's visual impairment and/or degree of disability and personal projects.            Therapeutic education: Concepts: prevention, education, rehabilitation.            Analysis of the needs and the context.            Elaboration of a therapeutic education approach: methods, principles and results, transdisciplinarity.            Individual and collective dimensions (patient and/or his entourage, group of patients...)</p>
<p><b>Orthoptic profession: legislation, regulation, management (16h)</b></p>	<p>3 (S1)</p>	<p>To be informed of French and European legislative texts in the field of health.            Know the texts that govern the profession of orthoptist and its different modes of practice.            Control the organization of the professional space and choose the equipment adapted to the structure.            Know the methods of financing care in the different structures and in the liberal sector.            Master administrative and accounting management for a liberal exercise</p>	<p>Legal and administrative aspects            Notion of the content of the public health code and the social security code.            Notion of French and European legislation concerning the health sector.            National and regional organisations involved in health care management.            Financing of care on a fee-for-service and activity basis            Regulations concerning the patient file, its traceability, transmission, archiving, etc.            Legislation and regulations concerning the profession of orthoptist and its modes of practice            Standards and regulations for professional facilities            Organisation and management            Organisation and operation of a private orthoptic practice            Labour law rules, administrative and organisational specificities of the different modes of practice.            Management and archiving of accounting and administrative documents.</p>

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			Purchase, maintenance and amortization of equipment; stock management.
<b>Cooperation, coordination with different actors (6h)</b>	3 (S1)	<p>Allow the orthoptist to define his role within the multi-professional team whose members are involved in the care of patients.</p> <p>Use communication methods to:</p> <ul style="list-style-type: none"> <li>- refer, if necessary, people to other professionals or other skills in order to ensure the continuity of care.</li> <li>- transmit the relevant information to the various actors by appropriate means while respecting the continuity of care.</li> <li>- analyze the information transmitted by other professionals</li> </ul> <p>Ensure the patient's consent and negotiate the content of the personalized care program within the framework of multi-professional care.</p> <p>Use terminology adapted to the different interlocutors "</p>	<p>Interprofessional cooperation: legal, economic and organisational aspects.</p> <p>Knowledge of coordination and care actions with caregivers, health professionals, social, economic and educational actors.</p> <p>Integration of the orthoptic care project in the multi-professional care.</p> <p>Specific organisation of orthoptic work within the framework of interprofessional cooperation, health centres, medical and ophthalmological practices, care networks, etc.</p>
<b>Support for professionals and future professional orthoptists (7.5h)</b>	3 (S1)	<p>Organize the information of a trainee or a new professional arrival in the service, structure or practice.</p> <p>Supervise and evaluate the actions of the interns in relation to the internship supervisor.</p> <p>Formalize know-how, interpersonal skills and knowledge with a view to advice, demonstrations, explanations, and commented analysis of practice for trainees and professionals</p>	<p>The educational function of the orthoptist with regard to trainees or colleagues in a reception situation within a structure.</p> <p>Concepts: support, tutoring, learning, supervision, delegation, control, collaboration, ...</p> <p>Theories and processes of learning and evaluation, Pedagogical relationship and professional positioning adapted to the evaluation situation.</p> <p>Professional responsibility. Conducting a support project.</p>

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Vision and learning disorders (4h)	3 (S1)	<p>Know the definitions of the various learning disabilities.</p> <p>Identify and master the relationships between visual function, its abnormalities and learning disabilities.</p> <p>Know all the stakeholders involved in this area and the care pathways.</p> <p>Know and apply the specific functional orthoptic assessment and rehabilitative and / or rehabilitative care</p>	<p>General knowledge</p> <p>Definitions of praxis, specific and non-specific learning disorders (the different schools of thought), specific oral and written language disorders, coordination acquisition disorders, dyscalculia and logical-mathematical reasoning disorders, attentional deficits with or without hyperactivity (ADHD), dyspraxias (visuospatial and visuomotor)</p> <p>Basic notions on the role of the different professionals and the results of their examinations impacting the assessment and the orthoptic care.</p> <p>The specific care pathway for learning disabilities.</p> <p>The institutions and centres that diagnose learning disabilities.</p> <p>The partners involved: health professionals, teachers and other professionals belonging to the national education system (educational teams)</p> <p>Assessment</p> <p>Specific applications and deepening of the previous knowledge concerning the orthoptic assessment according to the motor, sensory and functional axes.</p> <p>Orthoptic diagnosis taking into account the specificity of these disorders and handicaps.</p> <p>Taking into account the multi-disciplinary articulation specific to each patient when developing the care plan.</p> <p>Evaluation of environmental adaptations and arrangements according to visual needs.</p> <p>Rehabilitation</p> <p>Taking into account the patient's living environment, personal factors and compliance.</p>



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			<p>Adaptation of rehabilitation according to the characteristics of the dysfunction, the abilities, the age of the patient and the stage of treatment.</p> <p>Management of the progression of the different stages of rehabilitation, management of incidents.</p> <p>Re-education and/or rehabilitation according to the orthoptic diagnosis, in consultation with other professionals</p>
<p><b>Check-up and care of neuro-visual disorders, vision and balance (6h)</b></p>	<p>3 (S1)</p>	<p>Neurovisual disorders</p> <p>To master the relationship between visual function and identified neurovisual disorders.</p> <p>Approach fundamental concepts in the field of cognitive functions and gnosias.</p> <p>Know and apply the methods of examination and orthoptic rehabilitation and / or rehabilitation in order to highlight the dysfunctions linked to neurovisual disorders and to develop the available functional visual capacities.</p> <p>Identify from the orthoptic diagnosis the additional contributing examinations.</p> <p>Vision and balance Study the weight of visual input versus other sensory input: know the different management methods in order to improve its impact.</p> <p>Knowing how to highlight the complementarity of the results collected by the orthoptist and the various professionals involved.</p>	<p>Knowledge of pathologies leading to neurovisual disorders, visual information processing, hemispheric specialisations and neuroplasticity.</p> <p>Approach to cognitive functions.</p> <p>Definitions of neurovisual disorders: agnosias, cortical blindness, Bálint's syndrome, perceptual and/or perceptual-motor disorders, gaze strategy disorders, hemineglect, visuo-spatial disorders...</p> <p>Study of visual dysfunctions in visuospatial dyspraxia.</p> <p>Assessment</p> <p>Specific applications and deepening of the previous knowledge concerning the orthoptic assessment according to the three axes.</p> <p>Orthoptic diagnosis and elaboration of the care project.</p> <p>The care plan must take into account the specificity of these disorders, the associated disabilities and the multidisciplinary articulation specific to each patient.</p> <p>Evaluation of environmental adaptations and arrangements according to visual needs.</p> <p>Rehabilitation</p>

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			<p>Conducting orthoptic rehabilitation according to the care plan finalised during the assessment</p> <p>Adaptation of sensorimotor rehabilitation.</p> <p>Vision and balance</p> <p>Visual input: contribution of visual perception to balance (orientation and stabilisation of the body), importance of visual flow, actions on the oculomotor muscles, subjective vertical, the law of the canals, the notion of visual dependence...</p> <p>Role of ageing on sensory inputs.</p> <p>Notions of posturography</p> <p>Assessment</p> <p>Specific applications and deepening of the previous knowledge concerning the orthoptic assessment.</p> <p>Evaluation of the importance of visual input in balance after possible treatment of pre-existing motor and/or sensory disorders.</p> <p>Importance of refraction, correction method, lens and frame technology.</p> <p>Need to perform specific orthoptic tests, including co-ordinates, in different situations.</p> <p>Linking with other sensory inputs.</p> <p>Rehabilitation</p> <p>Conduct sensorimotor orthoptic rehabilitation according to the postural disorder and the finalized care plan.</p> <p>Suspicion of a postural disorder as a cause of recurrence of a visual disorder.</p> <p>Ways to optimise visual input in relation to other sensory inputs.</p>
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			Evaluation of a specific action on the reactivity of the oculomotor muscles to certain stimulations in order to re-establish right/left symmetry
Visual screening, visual skills, visual ergonomics (18h)	3 (S1)	<p>Know the specificities of visual screening at each age in life.            Understand the interest and the limits of visual mass screening with a view to its implementation.            Participate in the development and implementation of a visual screening program.            Analyze and study the visual conditions required for any activity.            Evaluate the level of adaptation of the functional vision in relation to the necessary visual stresses.            Know the legal aspects of visual skills.            Give advice adapted to visual ergonomics.</p>	<p>Screening            Definition of screening.            Conditions and design of a screening campaign.            Tests and protocols defined in the framework of a targeted screening.            Neonatal screening: study of psycho-visual reflexes, inspection of the eye bulbs and adnexa, ocular pathologies of the premature baby, ...            Infant and child screening: preferential gaze tests, visual acuity, oculomotricity studies, screen tests, stereoscopy, colour vision, etc.            Screening in occupational medicine: visual acuity in distance vision, intermediate vision and near vision, refraction, visual field, colour vision, binocular vision, etc.            Screening in the elderly: visual skills necessary for autonomy.            Search for age-related visual pathology.            Screening of visual abilities for the different driving licences.            Visual screening in sports medicine for licensing purposes.            Screening of ophthalmological pathologies in relation to public health priorities.            Analysis, evaluation and transmission of data, particularly by telemedicine.            Visual skills</p>

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			<p>Legal aspects and standards Ergonomics Advice on visual ergonomics and lighting for workstation adaptation in schools and workplaces: different types of lighting, notions of photometry, colorimetry, lighting environment. Factors influencing adaptation to screen work and advice. Specific adaptations according to age.</p>
English (10h)	1-2-3 (S1)	<p>Read and study professional articles in English. Write the abstract of your final thesis in English. Communicate in English to maintain a relationship with the person being treated</p>	<p>Professional vocabulary and grammar. Oral communication in the field of health and care. Reading and translation of professional articles and technical or procedural sheets.</p>
Psychology, psychopathology and neurophysiology (14h)	1-2-3 (S1)	<p>To know the normal and pathological psychological development of the child, the adult and the old person with different possibilities of measurement. Approach the relationship with the patient and his entourage for an adapted and maximum care.</p>	<p>Psychology of the child, the adult, the elderly and the disabled - perceptual-motor development - cognitive and intellectual functions - emotional life, personality and evolution - the different stages, the different theories (Wallon, Piaget Gibson, Spitz...) - psychology of the adolescent, the adult, the elderly ; - psychometrics, the different tests and their interpretation; - carer/carer relations. Approach to child and adult psychiatry - neuroses, psychoses - approach to psychoanalytical theories Neurophysiology, psychopathology - acquisition processes: sensation, perception, memory learning - the unadapted child</p>

Course	Study year (semester)	Theory	Tutorial classes
			<ul style="list-style-type: none"> <li>- the child disabled by motor, sensory and/or cognitive impairment</li> <li>- plasticity and rehabilitation after motor, sensory and cognitive deficiencies</li> <li>- development and plasticity, anatomical and physiological bases</li> <li>- genetic bases of child development</li> <li>- critical and sensitive periods of child development</li> <li>- synaptic plasticity in adults, regeneration, stem cells</li> <li>- normal and pathological ageing.</li> </ul>
Methodology documentation and bibliography (6h)	2 (S2)		
Functional explorations (33h)	1 (S2)	<p>Know, describe and perform the various examination techniques. Describe the normal result and the abnormalities observed.</p>	<p>Automated and manual visual field. Different kinetic and static techniques. Examination conditions, factors involved in the realisation of the visual field, stimulus characteristics, notions of threshold and sensitivity. Exploration of the chromatic sense by various techniques. Non-mydratic and mydratic retinography. Study of the sensitivity to luminance contrasts, adaptation to darkness and glare, using various devices and scales</p>

Course	Study year (semester)	Theory	Tutorial classes
Orthoptic evaluation (25h)	1 (S2)	<p>Understand the realization of an orthoptic assessment.            Understand the objectives of a balance sheet.            Know and master the material and examination methods used.            Make the link between the orthoptic assessment and the refractive data.</p>	<p>Interrogation and case history: analyse the request taking into account the data in the medical file            Observation of the patient.            Study of the motor axis: field of action and motility, conjugated motricity, gaze orientation, study and measurement of the deviation of the ocular axes, directing eye...            Study of the sensory axis :            - visual acuity, objective study of fixation, fusional and accommodative capacities, retinal-cortical correspondence, stereoscopic vision, neurosensorial disorders            - if necessary, the orthoptic assessment can be completed by additional examinations            Study of the functional axis: involvement of sensory and motor capacities in the activity.            - role of vision in sensory weighting, attention, perception and cognition: communication, information acquisition, task completion            - the role of vision in reading and writing activities...            Definitions of visual function and functional vision.            Clinical applications :            - examination and measurement of convergence insufficiency, latent and patent deviation, binocular imbalance, paralytic deviation, nystagmus            - mastery of sensory and motor tests, analysis and interpretation of data collected in the fields of sensory, motor, functional</p>

Course	Study year (semester)	Theory	Tutorial classes
			<p>- elaboration, argumentation and formalisation of the orthoptic diagnosis, the care plan and transmission to the ophthalmologist or other prescribing doctor and to the patient</p>
<p><b>Hygiene and risk management (14h)</b></p>	<p>1 (S2)</p>	<p>Acquire the basics of hygiene in order to prevent health-related ailments. Understand the quality approach and risk management. Knowing how to react to dysfunctions and prioritize.</p>	<p>Prevention and hygiene elements: hospital hygiene, hygiene of the premises, hand hygiene, professional dress, cleaning, disinfection, etc.            Nosocomial infections, infectious epidemics, iatrogenic effects. Prevention, transmission.            Circulation of waste.            Prevention and behaviour in case of accidents involving blood.            Methods of risk and hazard analysis.            Safety of the person.            Management of undesirable events.            Preventive measures and corrective actions.            Traceability.            Importance of hygiene and specific risks in the spread of eye infections.</p>
<p><b>Sensorimotor pathologies (28h)</b></p>	<p>1 (S2)</p>	<p>Knowledge of different sensorimotor disorders, clinical signs, etiology, evolution and means of treatment.</p>	<p>Study of the following sensorimotor pathologies:            - the different forms of heterophoria, heterophoria-tropia, binocular imbalance, convergence insufficiency;            - convergent strabismus, divergent strabismus, vertical elements and their classification;            - acquired and congenital oculomotor paralysis: neurogenic, paralysis of the III, IV, VI and myogenic: dysthyroidism, myopathy, myasthenia, myositis...</p>

Course	Study year (semester)	Theory	Tutorial classes
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			<ul style="list-style-type: none"> <li>- the different syndromes: Brown's syndrome, Stilling-Duane syndrome, craniosynostoses, muscle fibrosis, etc.</li> <li>- Nystagmus;</li> <li>- stiff neck.</li> </ul>
<p>Care of sensorimotor pathologies (16h)</p>	<p>1 (S2)</p>	<p>Carry out orthoptic rehabilitation according to the care plan finalized during the assessment.</p> <p>Know how to apply orthoptic rehabilitation methods.</p> <p>Inform the patient and / or the entourage, the prescriber of the care.</p>	<p>Assessment Specific applications and deepening of the previous knowledge concerning the orthoptic examination. Care plan: offer of the optical correction method, prismatic compensation, rehabilitation. Rehabilitation Organisation of the treatment of dysfunctions caused by these pathologies: -Convergence insufficiency, binocular imbalance, heterophoria, strabismus and the different syndromes, nystagmus and oculomotor paralysis. Knowledge of the different techniques, materials and methods to be applied in orthoptic rehabilitation, their relevance and the visual mechanisms involved. Organisation and planning of the different exercises chosen, both on the motor and sensory levels. Cross-referencing of sensorimotor and functional data in relation to the complaint. This re-education concerns the motor, sensory and functional aspects of vision. This orthoptic re-education can be associated with compensation: - optical: optical and/or prismatic correction</p>



Course	Study year (semester)	Theory	Tutorial classes
			<ul style="list-style-type: none"> <li>- ergonomic</li> <li>- surgical treatment.</li> </ul> <p>The practice, advantages and disadvantages of each orthoptic treatment are studied and explained to the patient and/or his entourage.</p>
<b>Pharmacology and therapeutics (6h)</b>	1 (S2)	<p>Knowing the mechanisms of action, absorption and elimination of molecules and drugs.</p> <p>Know the drug risks</p>	<p>Major drug categories.</p> <p>Galenic forms and routes of administration.</p> <p>Mechanisms of action, absorption and elimination of molecules and drugs.</p> <p>The drug system, pharmacovigilance and iatrogenic effects.</p> <p>Generalities on drug prescription and interactions</p>
<b>Functional explorations of ophthalmologic and general pathologies (17h)</b>	1 (S2)	<p>Describe the devices and master their use.</p> <p>Explain the different parameters and their meaning.</p> <p>Describe the normal and pathological corneal topography.</p> <p>Describe retinal angiography, with the exception of normal and pathological injection.</p> <p>Describe normal and pathological preoperative ocular biometry.</p> <p>Perform functional explorations related to handling contact lenses (fitting lenses)</p>	<p>Ocular electrophysiology: ERG and Multifocal ERG, flash VEP, checkerboards.</p> <p>Non contact pachymetry.</p> <p>Non contact tonometry.</p> <p>Optical coherence tomography (OCT): optic nerve, retina, anterior segment.</p> <p>Corneal topography.</p> <p>Retinal angiography except for the injection which must be performed by a qualified health professional.</p> <p>Preoperative ocular biometry.</p> <p>Handling of lenses.</p>
<b>Contactology (3h)</b>	1 (S2)	<p>Know the refraction of different ametropia.</p> <p>Know all the techniques concerning subjective and objective refraction.</p>	<p>General information on lens adaptation and its limitations.</p> <p>Practice of pre-adaptation examinations: questioning, refraction, keratometry, topography, slit lamp examination-biomicroscopy.</p> <p>Knowledge of the materials used and the different lenses.</p>

Course	Study year (semester)	Theory	Tutorial classes
		<p>Know the correction of different ametropia in contactology.</p> <p>Differentiate and practice the different cases of adaptation in soft or rigid lenses.</p> <p>Know the types of contact lens care. Knowing how to inform patients about adaptation, the importance of hygiene rules..</p>	<p>Correction of various ametropias and accommodative disorders.</p> <p>Fitting of lenses in certain pathologies (keratoconus, etc.)</p> <p>Practice of technical adaptations in different cases: children, adults. Different types of adaptation: permanent wear, occasional wear.</p> <p>The therapeutic lens, coloured lenses.</p> <p>Advice on fitting, removal and handling.</p> <p>Hygiene advice and maintenance solutions.</p> <p>Ethics and regulations: specific aspects</p>
<p><b>Statistics, epidemiology, public health (39h)</b></p>	<p>2 (S2)</p>	<p>acquire the bases in public health and epidemiology.</p> <p>Know and use statistical tools</p>	<p>Public health and epidemiology</p> <p>General organisation of the health system, health care supply, international comparisons of health systems.</p> <p>Social protection.</p> <p>Health economics.</p> <p>Epidemiological studies.</p> <p>Morbidity and demographic indicators.</p> <p>Descriptive and analytical statistics.</p> <p>Data sources and data collection.</p>
<p><b>Low vision (18h)</b></p>	<p>2 (S2)</p>	<p>Define visual impairment and functional vision.</p> <p>Know the pathologies causing visual impairment at all ages, their functional repercussions and compensation strategies.</p> <p>Know the mechanisms of visual information processing and those of compensation.</p> <p>Know the roles of vision and their interactions in carrying out an activity.</p>	<p>Definitions, concepts, history: low vision, visual impairment, blindness.</p> <p>Population concerned, epidemiology.</p> <p>Functional and cognitive repercussions linked to the mode of appearance and to the ophthalmological follow-up of the pathologies generating low vision at all ages of life.</p> <p>Compensation processes: strategies and adaptive mechanisms.</p> <p>Psychology of the visually impaired patient, announcement of the disability, role of the entourage.</p>

Course	Study year (semester)	Theory	Tutorial classes
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		<p>Know the different stakeholders and support structures</p>	<p>Task analysis. Sensory weightings. Balance and movement: interactions between vision, audiovestibular function, somatosensory system and cognition. Specific reading and writing strategies, learning and memory mechanisms. Basics of environmental ergonomics adapted to visual impairment. The different professionals, the structures of care (definitions and roles), reception, pathway and accompaniment of the patient.</p>
<p>Care of low vision (3h)</p>	<p>2 (S2)</p>	<p>Identify the different management methods according to the age and aptitudes of the patient.</p> <p>Assessment Knowing how to conduct a semi-structured interview with a view to objectifying the specific needs of the patient.</p> <p>Know and practice orthoptic examination methods and functional explorations to highlight functional abilities.</p> <p>Knowing how to match the available functional capacities with the patient's expectations.</p> <p>Determine the interest of rehabilitative care, establish the modalities, the program and its multidisciplinary articulation.</p> <p>Carry out orthoptic rehabilitation according to the care plan finalized during the assessment.</p> <p>Adapt rehabilitation and / or rehabilitation methods and learning methods.</p>	<p>Anamnesis and semi-structured interview. Visual efficiency during the performance of tasks. Multisensory and cognitive approach. Recording of spontaneous strategies and evaluation of their energy cost (fatigability, attentional and memory capacities). Study of the motor axis and oculomotor coordination. Visual acuity and optical correction (distance vision, intermediate vision, near vision), sensitivity to luminance contrasts, visual field and any additional contributing examination. Research into the location of optimal retinal sensitivity in order to set up adapted oculomotor strategies. Assessment of magnification needs, testing of optical and non-optical aids required for each activity. Specificities of the assessment at all ages of life. Explanation to the patient and his family of the results of the assessment and the functional consequences of the deficits.</p>

Course	Study year (semester)	Theory	Tutorial classes
		<p>Master regulatory assessments.</p>	<p>Objectives, constraints and limits of the treatment. Orthoptic diagnosis, care plan.            Report and interprofessional transmission.            Rehabilitation : Taking into account the patient's living environment, personal factors and compliance.            Implicit and explicit learning.            Analysis and prioritization of tasks in order to initiate or start again an activity.            Tools and techniques for rehabilitation.            Low vision rehabilitation software            Development and systematisation of compensation strategies.            Management of the progression of the different steps of re-education and rehabilitation, management of incidents.            Choice and training in the use of optical and non-optical aids.            Transfer of acquired knowledge into the patient's daily life.            Specificities of education, rehabilitation and reintegration at all ages of life.            Opportunity and performance of regulatory assessments, Final assessment. Cessation, suspension and follow-up of treatment.            Communication, transmission and reports to the various health professionals.            The different medical and paramedical interventions during care, using appropriate terminology.</p>

Course	Study year (semester)	Theory	Tutorial classes
<b>Imaging and communication technologies (4,5h)</b>	2 (S2)	<p>Know the principles of the different imaging techniques.</p> <p>Know and master new information technologies, their processing and data transmission in the medical and university fields.</p> <p>Learn about techniques and various professional software</p>	<p>Imaging Notions of signal, noise, signal/noise ratio, definition/resolution of an image, intensity and notions of colorimetry. Digitization of the image: from the sensor to the image, sampling, quantization, coding, qualitative criteria of an image. Main limits of an imaging system. Introduction to information systems: image and information storage. Communication technologies Definitions of communication techniques, application to the orthoptist profession Legislation and regulations, bio-medical ethics: challenges, application to patient files, prevention, screening and monitoring of pathologies. Mastery of the terminology and tools for transmitting information (written, e-mail, telemedicine, etc.) adapted to the situation. Knowledge of different professional software.</p>
<b>Procedures and emergency care (18h)</b>	2 (S2)	<p>Perform first aid measures and identify signs of discomfort in a patient.</p> <p>Master the basic rules of hygiene</p>	<p>Presentation of the training objective. The concept of health and ill-being: identifying and measuring ill-being. Stress management. Accident situations, risk prevention. Resuscitation manoeuvres with defibrillator, Heimlich manoeuvre. Hygiene in private practice, notions in a hospital environment.</p>

Course	Study year (semester)	Theory	Tutorial classes
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<p><b>Screening, prevention and follow-up of ophthalmologic pathologies (33.5h)</b></p>	<p>3 (S2)</p>	<p>To be able to recognize if an abnormality of the visual system exists from an anatomical, physiological and functional point of view.</p> <p>Know the concepts and techniques of prevention and therapeutic education in the visual field.</p> <p>Know and apply the elements of the protocol for screening and monitoring pathologies of the visual system.</p> <p>Know how to refer to the health professionals concerned.</p> <p>To be able to carry out an accurate and reliable transmission of data, in particular by telemedicine</p>	<p>As part of a screening process Knowledge required for the detection of an abnormality :</p> <ul style="list-style-type: none"> <li>- of the fundus of the eye</li> <li>- anterior segment</li> <li>- posterior segment</li> <li>- of the ocular tension</li> <li>- linked to a dysfunction of the visual system.</li> </ul> <p>Knowledge of legal screening (health record, schools, etc.) prevention Knowledge of epidemiology and training to participate in prevention campaigns. Notions of group and individual prevention... Therapeutic education, follow-up Knowledge of the specific protocols for the follow-up of each ocular pathology. Mastery of the examination techniques specific to the screening and monitoring of anomalies of the visual system. Mastery of protocols for monitoring and transmission of data, particularly by telemedicine, to the ophthalmologist for the diagnosis of a pathology.</p>
<p><b>Pre and postoperative orthoptic assessment. principles of surgical techniques (42h)</b></p>	<p>3 (S2)</p>	<p>Understand surgical protocols and the effects of surgery on oculomotor muscles.</p> <p>Know the principles and methods of refractive surgery and other eye surgeries.</p> <p>Master the pre-operative and post-operative assessments specific to each type of surgery.</p>	<p>Principles of oculomotor surgery: Knowledge of the principle and the various surgical techniques and their effects on the oculomotor muscles (strabismus, paralysis, nystagmus...) The preoperative check-up must allow the ophthalmologist to be informed about the protocol he will choose. The postoperative check-up enables the motor and sensory results to be evaluated.</p>

Course	Study year (semester)	Theory	Tutorial classes
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		<p>Participate in the explanation and information of the patient on the surgical management in coordination with the ophthalmologist</p>	<p>Knowledge of the treatment by intramuscular injection of botulinum toxin. Principles of refractive surgery: Knowledge of the principle and different techniques of refractive surgery. Application in each case of a specific orthoptic examination and functional explorations according to the procedures retained by the ophthalmologist. Principles of other ophthalmologic surgeries: glaucoma, retinovitreal damage, cataract, cornea, eyelids...</p>
<p><b>Diagnosis and care plan (2.5h)</b></p>	<p>3 (S2)</p>	<p>Develop and argue an orthoptic diagnosis and a care plan, formalize them for transmission to the prescribing physician and / or to the patient. Seek patient support for the proposed subsequent management. Evaluate the need for additional examinations or the need for additional skills for multi-professional care. Develop the conditions for the implementation and monitoring of the care project within the framework of multi-professional care.</p>	<p>Analysis of the different information collected during the orthoptic assessment. Cross-referencing the data and relating it to the patient's problem and/or the reason for the orthoptic assessment. Formulation of synthesis elements, hypotheses and possible evolutions. Clinical reasoning, elaboration and argumentation of the orthoptic diagnosis. Elaboration of a care project: care objectives, planning of the treatment, evaluation criteria, results and readjustments. Informing the patient about their abnormalities and their functional consequences. Proposal of a possible treatment, explanation of the objectives and choice of modalities. Information concerning the specificities of multidisciplinary care and its coordination. Transmission of the orthoptic diagnosis and the care plan to the ophthalmologist and/or prescribing doctor and/or the patient and/or his family.</p>



Course	Study year (semester)	Theory	Tutorial classes
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<b>End-of-studies work (dissertation / extended essay)</b>	3 (S2)	Methodology for the end-of-study work	Identify a symptomatology or a pathology from clinical cases encountered during the internship. Extract information, formalize it and put it into a general context. Determine a subject and highlight the inclusion and exclusion criteria of the cases selected. Use a bibliography related to the chosen subject. Produce an editorial work.
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