

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
Basic anatomy, physiology and optics	Anatomy	Corneal Epithelium, composition and thickness profile Corneal stroma, composition and profile Anterior Chamber Iris, Ciliary Body Posterior Chamber Posterior Segment in relation to Refractive surgery, Retina in Myopia, Vitreous body	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC1
	Physiology	Corneal Epithelium Physiology, Corneal Stroma, composition and thickness profile Physiology of Healing Cornea, in particular the epithelium	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC2
	Optics	Snellen optics, Ray tracing, Vertex calculation,	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC 6

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		Refractive Error, Hypermetropia, Myopia, Astigmatism, Hypermetropia Myopia Astigmatism Corneal Lenticular Retinal Anterior Posterior Residual			
		Principles of Spectacle correction Positive and negative lenses Positive and negative cylinder format			
		Accommodation theory Helmholtz Coleman united theory Abberations Fincham			
		Presbyopia Onset and progression			
		Presbyopia correction Bifocals Varifocals Multifocal contact lenses			
		Abberations Lower and higher order			

Syllabus Area	Detail	Cert LRS Focus		OST Theme	OST domain	OST Curriculum
			Mathematics of higher order Zernicke Series Coefficients Taylor Series, Fourier Analysis, Zonal Reconstruction Corneal vs. whole eye aberrations and centration relativity			
		Visual Acuity	General optical principles Snellen Charts LogMAR charts and principles			
Pre-op Assessment for Refractive Surgery	History	History as is relevant for refractive surgery Including criteria Relative and absolute Exclusion criteria Vision questionnaire (Fraenkel-Lawless; McAlinden) Refractive history including contact lenses Ophthalmic history Corneal Keratoconus Infections		What the Ophthalmologist is able to do	Clinical Assessment	CA1

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		Trauma Recurrent erosions Blepharitis Ocular surface Disease index Dry eye Amblyopia Strabismus Glaucoma Ocular medications General medical history Diabetes Autoimmune Irritable Bowel Fibromyalgia, chronic fatigue HIV or Hepatitis Malignancy Psychiatric			
	Examination/Investigations	Vision	Acuity at distance, intermediate and near	What the Ophthalmologist is able to do	Clinical Assessment CA2
		Refraction	Objective Auto-refraction	What the Ophthalmologist is able to do	Practical Skills PS2

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Ocular dominance Pupil Ocular motility binocular vision Visual fields Corneal Topography	Aberrometry - undilated (Distance - near) Retinoscopy (including cycloplegic retinoscopy) Subjective Focimetry		
				What the Ophthalmologist is able to do	Clinical Assessment CA6
				What the Ophthalmologist is able to do	Clinical Assessment CA7 PI 12
				What the Ophthalmologist is able to do	Patient Investigations PI 13
				What the Ophthalmologist is able to do	Patient Investigations PI 2
			Topography Placido system principle Curvature maps: axial and tangential maps Power/radii conversion Asphericity Parameters/indices		

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Tomography Normal Topography Slit-lamp scanning principle elevation maps (front and back surface) Best fit surfaces Pachymetry maps (thickness progression maps) Normal front and back surfaces maps Screening for Keratoconus • Corvis ST • Ocular Response Analyzer • Dynamic corneal response parameters • Stress-strain index Topography / Tomography • Tomographic Biomechanical Index (TBI) • Belin ABCD progression			

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		- Pentacam Random Forest Index – machine learning - Modern ectasia screening algorithms			
		Pachymetry corneal thickness, epithelial thickness Pupillometry Aberrometry Clinical correlation and impact on vision Positive and negative impact of higher order aberrations Dilated aberrometry			
		Contrast sensitivity Slit lamp - TFOS DEWS II diagnostic criteria - Tear Film & Ocular Surface Society recommendations - Modern dry eye diagnostic algorithms - Meibomian gland dysfunction staging - Non-invasive tear breakup time			
			What the Ophthalmologist is able to do	Clinical Assessment	CA9

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		- Meibography - Tear osmolarity - MMP-9 testing - Lipid layer interferometry - Corneal sensitivity - Neuropathic ocular pain - Neurotrophic keratopathy			
		Tear Film Eyelids, lid margin bulbar/tarsal conjunctiva Tear film prism and break up time (TBUT) Schirmer 1b Stains (Fluorescein, Rose Bengal, Lissamine Green) Cornea Angle Lens Tonmetry LOCS classification)			
		Fundus Dilated fundus examination	What the Ophthalmologist is able to do	Clinical Assessment	CA10

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Ultrasound Pachymetry	Single point measurement Minimum thickness		
		Other tests	Optical coherence tomography (OCT) Corneal thickness Epithelial thickness Corneal power Anterior Segment Retinal assessment (macular and optic disc) Endothelial Microscopy Binocular vision as relevant to refractive surgery		
Pre operative assessment for Lens based surgery		History	What the Ophthalmologist is able to do	Clinical Assessment	CA1
(As for Laser refractive surgery)		Examination	Consideration of regular or irregular astigmatism Corneal scars Corneal endothelium Specular microscopy	What the Ophthalmologist is able to do	Clinical Assessment CA2

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Consideration of combined surgery with DMEK/DSAEK Biometry Multifocal intraocular lense considerations Pupil size (mesopic, photopic) Pupil shift Angle Kappa Quality of vision tests and quality of life tests Pupil effects on subjective quality of vision/life	What the Ophthalmologist is able to do	Patient Investigations	PI 12
Theory of Laser Refractive Surgery		Principles of Excimer laser photo-ablation	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BCS 12 & PM17
PRK/LASEK/Ep i-LASIK		Surface ablation PRK LASEK Epi LASEK			
LASIK		LASIK Technological advancements Broad beam to flying spot laser			

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Manual microkeratomes Eye tracking Centration of refractive surgery Ablation profiles Optical Zone diameter Asphericity Wavefront-optimised Topography - guided Presbyopic profiles			
SMILE		Femtosecond laser lenticule extraction FLEX SMILE			
		- Lenticule geometry - Cap versus flap - Cap thickness - Optical zone - Transition zone - Centration - Cyclotorsion - Hyperopic SMILE - SMILE enhancements			

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	Pathology	• Circle • Thin-cap conversion • PRK enhancement • Flap conversion • VisuMax 800 • Automated centration • Docking • Suction loss management Safety calculations and corneal biomechanics Residual stromal thickness Pachymetry errors Flap thickness bias Ectasia Risk Model of post-operative tensile strength	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC2 BSC4
		Wound Healing			
		Modulation of wound healing			
LASIK		Surgical Protocol including management of intraoperative complications	What the Ophthalmologist is able to do	Surgical Skills	

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Standard operating procedure and modifications with justification Preparation Centration Alignment Patient positioning Microkeratome checks (if manual keratome) Exposing eye Drape Speculum insertion Surface marking Suction ring Microkeratome Head Microkeratome lubrication Microkeratome engagement Microkeratome Pass Microkeratome disengagement Microkeratome completion Patient repositioning Eye tracker activation			

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Suction with femtosecond laser Lifting the flap Ablation Repositioning the flap Removing the speculum immediate post op check	Aiming beam Sponge placement Flap lift Time to ablation Drying of corneal bed Aiming beam Flap hinge protection Laser activation		
Ectasia	(Keratoconus)	Mangement of Ectasia Cross linking Intra-corneal rings and contact lenses Cross linking and PRK/SMILE (Athens protocol) CAIRS pcedures	What the Ophthalmologist is able to do		
Technology and theory of lens based refractive surgery			How the Ophthalmologist approaches their practice		

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		Phakic intraocular lens		Patient Investigations	PI 12
		Refractive lens exchange			
		Biometry			
		Understanding differences in formulae		Patient Investigations	PI 12
		- Barrett Universal II - Barrett True-K - Kane - EVO - Pearl-DGS - Hill-RBF - Olsen - Cooke K6 - Ray-tracing calculations - Thick-lens optics - Formula selection	What the Ophthalmologist is able to do		
		Lens power calculations			
		Astigmatism calculations		Surgical Skills	SS4
		Corneal incision placement	What the Ophthalmologist is able to do		

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		Corneal astigmatism/IOL cylinder/Total astigmatism Axial length measurement Keratometry Total corneal power measurement Estimated lens position Intraoperative aberrometry Biometry after corneal refractive surgery - formulae IOL types • Monofocal / Toric • Enhanced monofocal IOLs • Non-diffractive EDOF • Diffractive EDOF Continuous range of vision • Hybrid multifocal designs • Small aperture optics • Adjustable IOLs • Light Adjustable Lens • Extended depth technology • Dysphotopsia mechanisms			

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		Positive vs negative spherical aberration strategies Multifocal Phakic intraocular lens Piggyback Conventional phacoemulsification surgery Femtosecond laser cataract surgery Extra-capsular cataract surgery Endophthalmitis prophylaxis Bioptics			
			What the Ophthalmologist is able to do	Patient Management	PM7
Cataract / Lens surgery and intra-operative complications		Surgical Protocol including management of intraoperative complications	What the Ophthalmologist is able to do	Surgical Skills	SS4
		Active pre operative management of ocular surface - IPL, LLLT , LipiFlow , iLux, MiboFlow - Ciclosporin, Punctal plugs , Autologous serum, Scleral lenses Blepharitis			

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		- Amniotic membrane - Optimisation before cataract biometry			
		HSK prophylaxis Other potential infections Surgical field sterilisation Lacrimal apparatus infection management			
		Anaesthesia			
		- Digital marking - Image guidance - Callisto - Verion - Intraoperative aberrometry - Femtosecond updates Corneal incision/astigmatism management Planar hinged			
		Arcuate keratotomies Opposite clear corneal incision on-axis incision			

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		capsulorrhexis			
		Hydrodissection			
		Phacoemulsification			
		Divide and conquer			
		Chop			
		Stop and Chop			
		IOL implantation			
		IOL implantation in aphakia			
		Intracameral subconjunctival antibiotics			
		Sealing of section			
		Shield			
Correction of Regular and Irregular Astigmatism		Regular astigmatism			
		Vector analysis of regular astigmatism Laser correction: Eye tracking and cyclotorsion IOL correction: Lens tilt Corneal incisions			
		Irregular astigmatism			
		Advanced diagnostics Thickness layer mapping			

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		Aberrometry HD A Surgical Management PTK Topography guided Wavefront guided Stromal topography			
Phakic IOLs		Technology and theory of phakic IOLs - EVO Visian ICL , Central port optics , Vault prediction, Lens rise Angle-to-angle, Sulcus-to-sulcus - OCT / UBM vault assessment - Sizing algorithms / AI assistants - Cataract formation - Pigment dispersion - Endothelial monitoring - Exchange indications Biometry for phakic IOLs Sulcus to sulcus White to white Types of phakic IOL Anterior chamber	How the Ophthalmologist approaches their practice		

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Posterior chamber Iris fixed Conventional surgery			
		Phakic IOLs surgical protocol Posterior chamber Iridectomy/ yag laser iridotomy Incision IOL upload and insertion IOL positioning Iris fixated Incision Enclavation Iridectomy Angle supported Incision IOL insertion Iridectomy Management of complications on iris, cornea and lens	What the Ophthalmologist is able to do		
Presbyopia		Refractive surgical correction of Presbyopia Excimer laser for presbyopia Multifocal profiles	What the Ophthalmologist is able to do	Surgical Skills	

Syllabus Area	Detail	Cert LRS Focus	OST Theme	OST domain	OST Curriculum
		Monovision Modified monovision Corneal inlays Multifocal IOLs Monofocal IOL with monovision Aspheric monofocal IOL and monovision Light adjustable lens (Calhoun)			
High Ametropia		Correction of High Myopia/Hyperopia LASIK/PRK/SMILE Safety considerations Biomechanics Limits Phakic IOLs Management of Complex Eyes - Keratoconus - Pellucid degeneration - Post-RK - Post-LASIK cataract - Prior RK - Prior PK - DALK Refractive Lens Exchange	What the Ophthalmologist is able to do	Surgical Skills	

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		- DMEK - Fuchs dystrophy - High myopia - Short eyes - Nanophthalmos				
Post operative complications of lens based refractive surgery		Post op Follow up of Lens based surgery	Routine management overview guide All Refraction Visual Acuity Slit lamp of anterior and posterior segment IOP	What the Ophthalmologist is able to do	Patient Management	
			Day 1-7 Exclude the following IOL rde-centration endophthalmitis retinal detachment choroidal effusion			

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			suprachoroidal haemorrhage dysphotopsia Cystoid macular oedema (CMO)			
			Month 2-3 CMO Lens position/tilt Aberrometry Capsulorrhexis size and shape Quality of vision, quality of life questionnaire			
			Month 3 and 12 months Night vision history IOP measurement Retinal complications Quality of vision, quality of life questionnaire Negative and positive dysphotopsias Posterior capsule opacification Tear film assessment			

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		Post op asesment and management of complications of laser refractive surgery Routine management Day 1, first month, 3 month and 12 months Routine testing Refraction Visual acuity Topography Tomography Slit lamp Day 1 Epithelial defect DLK Microfolds Interface debris Oedema Infections Month 1 Corneal oedema Epithelial ingrowth Visually significant glare			

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		3 and 12 months Dry eye Dry eye diagnosis and management Night vision complaints Regression Epithelial thickness changes Keratometry changes Biomechanical changes and ectasia risks IOP measurement Satisfaction questionnaires • Halo assessment • Glare simulation • Contrast sensitivity • Mesopic performance • Defocus curves • Patient reported outcome measures (PROMs), VFQ-25 • QoV questionnaire			

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Retreatments		Retreatment for corneal refractive surgery - LASIK enhancement algorithms - PRK after LASIK - SMILE enhancement options Flap lift PRK SMILE options Safety calculations	What the Ophthalmologist is able to do	Surgical Skills	
		Retreatment for lens based refractive surgery - ICL exchange - IOL exchange - Piggyback IOLs - Laser after multifocal IOL - YAG timing - Management of residual refractive error Lens exchange/extraction Piggyback lens Bioptics/corneal refractive surgery			
Good Medical Practice		Compassion	How the ophthalmologist approaches their practice	Attitudes, Ethics & Responsibilities	AER1

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		Autonomy Considerate approach Empathy Confidentiality Limits Help Multi-source Feedback Appraisal and revalidation Ethical approach Probity Duties of a doctor Evidence based approach		Attitudes, Ethics & Responsibilities Decision making, clinical reasoning & judgement	AER2 AER3 AER4 AER5 AER6 AER7 AER8 AER9 AER10 AER11 AER12 DMRJ1
		Quality improvement		Decision making, clinical reasoning & judgement	DMRJ2
		Personal audit (theory, process, types of audit) Theory Process		Decision making, clinical reasoning & judgement	DMRJ3

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		Types of audit used in refractive surgery Integration into clinical practice Standard setting			
		Information - provision of written information	What the Ophthalmologist is able to do	Communication	C4
		Consent			C5
		Complaints			C9
	Other aspects of clinical governance	Advertising and marketing Governing bodies			
		Patient and public involvement (PPI)			
		Laser safety and regulations			
		Pillars of clinical governance Clinical effectiveness and research Audit Risk management Education and training PPI Using information and IT Staffing and staff management			
		Risk management			

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		CPD	The Ophthalmologist as a professional	CPD	
	Outcomes analysis	Stability/Safety/Predictability/Efficacy Define safety in laser refractive surgery: percentage loss more than one / two lines in postop BCDVA compared to preop Define efficacy in laser refractive surgery. Cumulative Percentage of patients with UCVA- 6/5,6/6, 6/7.5 etc Predictability:- scatter plot attempted versus achieved, perfect line and regression line demonstrates if in general under or over correcting, parallel lines +/- 0.5 and +/-1D Stability: achieved change in refraction over time			
		Definition of a nomogram			

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		Calculation of a nomogram			
		Minimum records for outcome analysis Refractive data Uncorrected acuity and corrected acuity Complications log			
		Standard reporting 6 graphs 1 Bar chart: Cumulative postoperative Snellen Acuity, unaided and spectacle corrected vision 2 Bar chart: % eyes vs change in corrected Snellen acuity 3 Scatterplot of Achieved vs Attempted correction with linear regression and 95% confidence intervals			

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		4 Bar chart : % eyes vs grouped postoperative spherical equivalent refraction (give % within $\pm 0.5D$ and $\pm 1.0 D$) 5 Bar chart of pre and post op % eyes vs grouped refractive astigmatism 6 Stability of spherical equivalent refraction after surgery Marketing for Refractive Surgery • Social media • Digital marketing ethics • Outcome transparency • Structured outcome reporting Patient expectation management			