Syllabus Area	Detail	Cert LRS Focus				OST Theme	OST domain	Maps to OST Curriculum code (where relevant)
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, Refractive Error, Hypermetropia, Myopia, Astigmatism,				How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC 6

			Hypermetropia Myopia Astigmatism	Corneal Lenticular Retinal	Anterior Posterior Residual			
		Priciples of Spectacle correction						
			Positive and negative lenses Positive and negative cylinder format					
		Accommodation theory						
			Helmholz Coleman united theory Abberations	Fincham				
		Presbyopia	Onset and progression					
		Presbyopia correction						
			Bifocals Varifocals Multifocal contact lenses					
		Abberations	Lower and higher order Mathamatics 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				What the Ophthalmologist is able to do	Clinical Assessment	CA1
			Inclusing criteria Relative and absolute Exclusion criteria					

			Vision questionnaire (Fraenkel-Lawless; McAlinden) Refractive history including contact lenses Ophthalmic history					
				Corneal	Keratoconus Infections Trauma Recurrent erosions			
				Blepharitis				
				Dry eye	Ocular surface Disease index			
				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 Aberrometry - undilated (Distance - near)		What the Ophthalmologist is able to do	Practical Skills	PS2

				Retinoscopy (including cycloplegic retinoscopy)			
			Subjective Focimetry				
		Ocular dominance					
		Pupil			What the Ophthalmologist is able to do	Clinical Assessment	CA6
		Ocular motility binocular vision			What the Ophthalmologist is able to do	Clinical Assessment	CA7 PI 12
		Visual fields			What the Ophthalmologist is able to do	Patient Investigations	PI 13
		Corneal Topography	Topography		What the Ophthalmologist is able to do	Patient Investigations	PI 2
				Placido system principle Curvature maps: axial and tangential maps Power/radii conversion Asphericity Parameters/indices Normal Topography			
			Tomography	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				
				Topography, tomography 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	Tear film		What the Ophthalmologist is able to do	Clinical Assessment	CA9
				Eyelids, lid margin bulbar/tarsal conjuctiva Tear film prism and break up time (TBUT) Schirmer 1b			
				Stains (Fluorescein, Rose Bengal, Lissamine Green)			
			Cornea Angle				

			Lens	LOCS classification)			
			Tonmetry				
		Fundus	Dilated fundus examination		What the Ophthalmologist is able to do	Clinical Assessment	CA10
		Ultrasound Pachymetry	Single point measurement Minimum thickness				
		Other tests	Optical coherence tomography (OCT)				
				Corneal thickness Epithelial thickness Corneal power Anterior Segment Retinal asesssment (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		What the Ophthalmologist is able to do	Clinical Assessment	CA2
				Specular microscopy			
			Consideration of combined surgery with DMEK/DSAEK				
			Biometry Multifocal intraocular lense considerations		What the Ophthalmologist is able to do	Patient Investigations	PI 12

				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				
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/Epi-LASIK		Surface ablation	PRK LASEK Epi LASEK				
LASIK		LASIK Technological advancements	Broad beam to flying spot laser Manual microkeratomes Eye tracking Centration of refractive surgery Ablation profiles	Optical Zone diameter Asphericity Wavefront-optomised Topography - guided Presbyopic profiles			
SMILE		Femtosecond laser lenticule extraction	FLEx SMILE				

	Pathology	Safety calculations and corneal biomechanics Residual stromal thickness Pachymetry errors Flap thickness bias Ecasia Risk Model of post-operative tensile strength Wound Healing Modulation of wound healing	How the Ophthalmologist approaches their practice	Basic & Clinical sciences	BSC2 BSC4
LASIK		Surgical Protocol including management of intraoperative complications 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	What the Ophthalmologist is able to do	Surgical Skills	

				Microkeratome disengagement Microkeratome completion Patient repositioning Eye tracker activation Aiming beam			
			Suction with femtosecond laser Lifting the flap				
				Sponge placement Flap lift Time to ablation Drying of corneal bed			
			Ablation				
				Aiming beam Flap hinge protection Laser activiation			
			Repositioning the flap Removing the speculum immediate post op check				
Ectasia	(Keratoconus)	Mangement of Ectasia	Cross linking Intra-corneal rings and contact lenses Cross linking and PRK/SMILE (Athens protocol)		What the Ophthalmologist is able to do		
Technology and theory of lens based refractive surgery		Phakic intraocular lens Refractive lens exchange			How the Ophthalmologist approaches their practice		

		Biometry Lens power calculations Astigmatism calculations		What the Ophthalmologist is able to do	Patient Investigations	PI 12
		Corneal incision placement Corneal astigmatism/IOL cylinder/Total astigmatism Axial length measurement Keratometry Total corneal power measurement Estimated lens position Intraoperative abberometry Biometry after corneal refractive surgery - formulae IOL types	Monofocal Toric Multifocal Phakic intraocular lens Piggyback	What the Ophthalmologist is able to do	Surgical Skills	SS4
		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 Blepharitis HSK prophylaxis Other potential infections Surgical field sterilisation Lacrimal apparatus infection management			
		Anaesthesia			
		Corneal incision/astigmatism management Planar hinged			
		Arcuate keratotomies Opposite clear corneal incision on-axis incision 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 Aberrometry HD A	
			Surgical Management PTK Topography guided Wavefront guided Stromal topography		
Phakic IOLs		Technology and theory of phakic IOLs		How the Ophthalmologist approaches their practice	
			Biometry for phakic IOLs	Sulcus to sulcus White to white	
			Types of phakic IOL	Anterior chamber Posterior chamber Iris fixed	
			Conventional surgery		
		Phakic IOLs surgical protocol		What the Ophthalmologist is able to do	

			Posterior chamber				
				Iridectomy 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				
Presbyopia		Refractive surgical correction of Presbyoipa			What the Ophthalmologist is able to do	Surgical Skills	
			Excimer laser for presbyopia				
				Multifocal profiles 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			What the Ophthalmologist is able to do	Surgical Skills	
			LASIK/PRK/SMILE				
				Safety considerations Biomechanics Limits			
			Phakic IOLs Refractive Lens Exchange				

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 suprachoroidal haemorrhage dysphotopsia Cystoid macular oedema (CMO)			
			Month 2-3	CMO Lens position/tilt Aberrometry Capsulorrhexis size and shape Quality of vison, quality of life questionnaire			
			Month 3 and 12 months	Night vision history IOP measurement			

				Retinal complications Quality of vison, quality of life questionnaire Posterior capsule opacification Tear film assessment			
		Post op asessment 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 Dry eye 3 and 12 months			

		Dry eye diagnosis and management Night vision complaints Regression Epithelial thickness changes Keratometry changes Biomechanical changes and ectasia risks IOP measurement Satisfaction questionnaires			
Retreatments		Retreatment for corneal refractive surgery Flap lift PRK SMILE options Safety calculations	What the Ophthalmologist is able to do	Surgical Skills	
		Retreatment for lens based refractive surgery Lens exchange/extraction Piggyback lens Bioptics/corneal refractive surgery			
Good Medical Practice		Compassion Autonomy Considerate approach Empathy	How the ophthalmologist approaches their practice	Attitudes, Ethics & Responsibilities Attitudes, Ethics & Responsibilities	AER1 AER2 AER3 AER4

		Confidentiality Limits Help Multi-source Feedback Appraisal and revalidation Ethical approach Probity Duties of a doctor Evidence based approach	How the ophthalmologist approaches their practice	Decision making, clinical reasoning &judgement	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 Types of audit used in refractive surgery Integration into clinical practice Standard setting		Decision making, clinical reasoning &judgement	DMRJ3
		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 Clinial effectiveness and research Audit Risk management Education and training PPI Using information and IT Staffing and staff management			
		Risk management 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 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 postoeprative Snellen Accuity, 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		
			4	Bar chart : % eyes vs grouped postoperative spherical equivalent refraction (give % within ± 0.5D and ±1.0 D)		
			5	Bar chart of pre and post op % eyes vs grouped refractive astigmatism		
			6	Stability of spherical equivalent refraction after surgery		