Ophthalmology -- Kandy

Module	Eye
Module description (Describe the key concepts, relevance and clinical applicability to a medical undergraduate. Ophthalmic basic sciences	Eye is a vital sensory organ through which we see the external environment. Therefore any disease affecting the eye is of major concern to patients. Blindness is a major disability in life. You may come across conditions such as cataract, red eyes, short sightedness and farsightedness, which are common eye disorders. Eye injuries often lead to visual disabilities. Many diseases involving other systems can affect the structure and function of the eyes. Therefore an understanding of the structure and function of this organ is important. In addition, vision is also necessary for various other bodily functions such as maintenance of posture & motor co-ordination. Eye is also involved in non-vision activities like expression of feelings, blinking, crying & tearing.
Recommended references/ web sites (Text books and recent journal articles)	Guyton – Text book of medical Physiology Ganong – Review of medical Physiology Basic and clinical science course – Fundamentals and principles of Ophthalmology Section 2 American Academy of Ophthalmology

Objectives in Ophthalmology

Vision (Basic Sciences in Ophthalmology)

1. Discuss the tem binocular vision
2. Explain the role of pupil in the visual apparatus considering the concept eye as a camera.
3. Explain the basic principles underlying the optics of vision with special reference to refraction, focal length, refractive power, image formation, visual acuity
4. List the errors of refraction, describe how that occur and explain the basis of correcting each of them.
5. Explain the term accommodation as applied to the eye and explain the vases of the accommodation – convergence reflex.
6. Describe the functions of retina.
7. Explain the basis principles underlying photochemistry of vision.
8. Explain the mechanism of dark and light adaptation.
9. Describe the basis of colour vision in terms of photo pigments and their light absorption spectra.
10. Discuss the usefulness of contact lenses.
11. Describe the anatomy of orbit and eyeball including blood supply, nerve supply and histology of eye.
12. Explain the relationship of eyeball to skull and other structures.
13. Trace the visual pathway from the eyeball including blood supply, nerve supply and histology of eye.
14. Correlate the lesions along the visual pathway with their anatomical structures.
15. Describe the development of vision and visual defects from childhood to old age.
16. List the tests of vision and explain their bases.
17. List the different types of visual aids and briefly discuss their functions.
18. List the common drugs used in ophthalmology and explain their actions.

Eye as a vital organ

Be aware that the blindness as a major disability.
List the causes of blindness.
Discuss the anatomic – physiologic correlates of different causes of blindness.
Be aware that injuries are a common cause of blindness and other eye disorders.
List the different causes of injuries to eye and discuss the methods of preventing them.
Explain how corneal opacities could occur and briefly discuss the role of corneal transplants as a method of treatment of corneal disorders.
Explain the physiological basis of the following disorders of eye: cataract glaucoma, strabismus.
Explain the relationship between eye and diabetes.

Eye as a projection of brain

Describe the structure of eye muscles and explain how they are controlled by the relevant cranial nerves.
Explain the central control of conjugate movement.

Basic eye examination

Lids and orbit
Visual acuity
Eye movements
Conjunctiva and cases
Cornea
Pupils
Afferent pupil defect
Efferent pupil defect
Red reflex and funduscopy
Fundus
- Optic disc
- Central retire
- Peripheral retina

Visual fields

Acute eye diseases and common eye diseases
(Students are expected to have basic knowledge about these conditions)

Common visual symptoms
Loss of vision
Floaters
Double vision

Loss of vision

Reduced visual acuity or loss of visual fields

Acuity unilateral visual loss
Acuity bilateral visual loss
Chronic unilateral/ bilateral visual loss
Transient loss of vision

1.1 Acuity Unilateral Visual Loss

Main causes

Central retinal artery occlusion
Anterior ischeamic optic neuropathy
Secondary to a). Temporal arteritis
b). Atherosclerosis
Central retinal vein occlusion
Macular haemorrhage
Trauma

Less common causes

- Acute ischaemia
- Optic neuritis
- Vitreous haemorrhage
- Retinal detachment
- Endophthalmitis
- Functional

Acute bilateral visual loss

Common causes

- Vertebral artery insufficiencies

Occipital ischemia or stroke

Optic nerve ischemia (Acute ischeamic optic neuropathy)

Concedes temporal arteritis

Less common causes

- Proliferative diabetic retinopathy
- Malignant hypertension
- Blood dyscrasias leading to bilateral central retinal vein occlusion
- Functional or hysterical often in children or compensation related causes.

Chronic Unilateral and bilateral visual loss

Main causes

- Age related maculopathy
- Cataract
- Incorrect or old glasses

Less common causes

Chronic Glaucoma, Hypertension, Diabetics
Space occupying lesion
Heavy consumption of alcohol and cigarettes
Keratoconus

Transient loss of vision

Main causes

Carotid artery diseases
[Platelet or cholesterol emboli in the retinal circulation thrown off from artherosclrotic carotid arteries]
Atrial fibrillation, causing emboli
Vertabrobasilar or gross carotid insufficiency leads to bilateral simultaneous transient loss
Temporal arteritis
Migraine
Papiloedema