

Foundational Bioscience for B Sc in Optometry (Bridge Course)

Contact Classes

[Module: 6 Hours]

- a. General Introduction to Human Anatomy and Physiology with brief emphasis on Principles of Biochemistry. **[1 hr]** **[Common to Foundational Human Biology, Bio-Chemistry and Biotech (Bridge Course)]**
- b. General Introduction to Eye Anatomy, Ocular Physiology and Ocular Neurophysiology **[1 hr]**
- c. Brief description of ocular diseases emphasising on diseases affecting each component of anterior and posterior segment of eye, ocular diseases due to microbial infection, autoimmune disorders of eye, special conditions in pediatric and geriatric population, and various comorbidities affecting ocular health **[1 hr]**
- d. Introduction to physics of reflection, refraction and diffraction of light, laws governing the phenomena **[1 hr]**
- e. Introduction to the various instruments employed in optometry, their working principles and their functions **[1 hr]**
- f. Introduction to various corrective measures in management of ocular problems with discussion on different types of lenses and contact lenses and protective coatings on lenses **[1 hr]**

Spot Evaluation and Assessment

Reference Books and Web Resources:

1. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
2. Human Physiology (Vols 1 and 2) by Dr. C.C. Chatterjee, Academic Publishers Kolkata

3. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee Brothers Medical Publishers, New Delhi.
4. Harper's Biochemistry by Robert K. Murry, Daryl K. Granner and Victor W. Rodwell.
5. <https://www.tutis.ca/Senses/L1Eye/L1Eye.pdf>
6. https://ksumsc.com/download_center/Archive/4th/434/434%20Teamwork/Ophtha/B/1-%20Anatomy%20and%20Physiology.pdf
7. https://ksumsc.com/download_center/Archive/4th/434/434%20Teamwork/Ophtha/B/1-%20Anatomy%20and%20Physiology.pdf
8. https://ksumsc.com/download_center/Archive/4th/434/434%20Teamwork/Ophtha/B/1-%20Anatomy%20and%20Physiology.pdf
9. <https://ncert.nic.in/vocational/pdf/kevt103.pdf>
10. https://resource.odmu.edu.ua/chair/download/88974/fBESSvbs_1msZFkYSjsZBA/Common%20Eye%20Diseases%20and%20their%20Management.pdf
11. https://www.goodtheorist.science/files/louro_optics.pdf
12. <https://sps.scripts.mit.edu:444/resources/gre/opticsNotes1.pdf>
13. http://www.surendranathcollege.ac.in/new/upload/ASOK_DASPhysics1%20Optics2020-03-25optics-adv-notes1.pdf
14. [https://www.aees.gov.in/htmldocs/downloads/e-content_06_04_20/The%20Human%20Eye%20and%20The%20Colourful%20World%20PPT-Mod-2\(10TH\).pdf](https://www.aees.gov.in/htmldocs/downloads/e-content_06_04_20/The%20Human%20Eye%20and%20The%20Colourful%20World%20PPT-Mod-2(10TH).pdf)
15. https://v2020eresource.org/content/files/Instruments_book.pdf
16. <https://www.ruseducation.in/books/Ophthalmology-11th.pdf>
17. [https://phys.libretexts.org/Bookshelves/University_Physics/Book%3A_Physics_\(Boundless\)/24%3A_Geometric_Optics/24.2%3A_Reflection_Refraction_and_Dispersion](https://phys.libretexts.org/Bookshelves/University_Physics/Book%3A_Physics_(Boundless)/24%3A_Geometric_Optics/24.2%3A_Reflection_Refraction_and_Dispersion)
18. <https://pressbooks-dev.oer.hawaii.edu/collegephysics/chapter/26-2-vision-correction/>

Self-Placed Learning

Through Massive Open Online Courses (MOOCs)

[20 Hours]

Online Resources

1. <https://www.youtube.com/watch?v=GXW0nz93XtI> (Introduction to the Human Body: Overview and Gross Anatomy) (Duration : 24 mins)
2. <https://www.youtube.com/watch?v=W2W-phasKHM> (Human Organ Systems – Physiology | Lecturio Nursing) (Duration : 14 mins)
3. <https://www.youtube.com/watch?v=wSKxCNcj6Ac> (Biochemistry Part 1; Carbohydrates, Lipids & Proteins) (Duration : 13 mins)
4. <https://www.youtube.com/watch?v=4kpXKu5QKww> (Anatomy - Eye Overview – YouTube) (Duration : 12 mins)
5. <https://www.youtube.com/watch?v=TPfU-knqxGU> (Anatomy and Physiology of Vision) (Duration : 52 mins)
6. https://www.youtube.com/watch?v=uYdLVtJ_TQk (Eye : optics, photochemical basis of vision, visual neurophysiology) (Duration : 24mins)
7. <https://www.youtube.com/watch?v=RtpjJg20FwQ> (Introduction to Ocular Disease and Cataract Surgery) (Duration : 1hr 25mins)
8. <https://www.youtube.com/watch?v=0x-Vr4T6Hfw> (Age-Related Eye Diseases) (Duration : 3 mins)
9. <https://www.youtube.com/watch?v=RyZdSMsxpIU> (Demystifying Retinal Diseases) (Duration : 1hr 25mins)
10. https://www.youtube.com/watch?v=f_2LyQUJ5vI (Ocular Surface Disease) (Duration : 49 mins)
11. <https://www.youtube.com/watch?v=TuOCT6Zatuc> (Bacterial and Viral Conjunctivitis) (Duration : `19 mins)
12. https://www.youtube.com/watch?v=QJ_7WHNLUOI (Reflection, Refraction, and Diffraction) (Duration : `16 mins)
13. <https://www.youtube.com/watch?v=RLU0ZkwzycU> (Fundamentals of Slit Lamp Biomicroscopy) (Duration : `23 mins)
14. <https://www.youtube.com/watch?v=1E-sEhy9tBo> (Using the Slit Lamp Microscope to Visualize the Ocular Structures) (Duration : `1 hr23 mins)
15. <https://www.youtube.com/watch?v=qh8y8Kmdues> (Applanation Tonometry | how to do goldmann applanation tonometry? (Duration : `29 mins)

16. <https://www.youtube.com/watch?v=ezOoPKZwNDk> Ophthalmology - Retinoscopy (Part 1/2) (Duration : `11 mins)
17. <https://www.youtube.com/watch?v=yx0ESaZ45os> (Use of ophthalmoscope) (Duration : `17 mins)
18. <https://www.youtube.com/watch?v=ceaussefHe8> (Direct Ophthalmoscope - A Complete Tutorial). (Duration : `11 mins)
19. <https://www.youtube.com/watch?v=RFbeBQholJ4> (Contact Lenses ° A Complete Guide: Types, Brands, Recommendations, Precautions & FAQs) (Duration : `22 mins)
20. <https://www.youtube.com/watch?v=WeiuCeOMbfw> (Therapeutic Contact Lenses: Management of Ocular Surface Disease) (Duration : `45 mins)
21. <https://www.youtube.com/watch?v=HHWS5Z8KIYY> (Myopia 5. Preventing Myopia: Treatment Methods. Part 1: How They Work). (Duration : `39 mins)
22. <https://www.youtube.com/watch?v=PRZTJAxZy90> (Emmetropia, myopia, hyperopia and corrective measures for each) . (Duration : `11 mins)
23. <https://www.youtube.com/watch?v=aak9TyL2EAs> (Low Vision Rehabilitation) (Duration : `51 mins)
24. <https://www.youtube.com/watch?v=3S2S6QY7xIw> (Ophthalmology 236 c Visual Field Defects POAG Primary Open Angle Glaucoma Treatment Laser Surgery) (Duration : `26 mins)
25. <https://www.youtube.com/watch?v=NyKlz3pPaXM> (Clinical Refraction 2017) (Duration : 56 mins)
26. <https://www.youtube.com/watch?v=zFOLy90ynuk> (Refraction: A Step Up From the Basics) (Duration : 1h 46 mins)
27. <https://www.youtube.com/watch?v=FYT-vpQpniY> (iFocus Online, Lecture 3: Clinical Optics and Refraction Module 1) (Duration : 1h 10 mins)
28. <https://www.youtube.com/watch?v=4L8kUNdtRnM> (Ocular Drug Delivery system, Definition Types & Advantage) (Duration : 34mins)
29. <https://www.youtube.com/watch?v=GUhcLGjDin4> (Introduction to ocular drug delivery) (Duration : 36mins)
30. <https://www.youtube.com/watch?v=mu3oRBKEi3M> (Basic Lens Styles: Single Vision, Flat Top, Bifocal, Trifocal, Round Seg, and Executive) (Duration : 14mins)
31. <https://www.youtube.com/watch?v=OjqZXbG82mo> (How To Use The Lensmeter - Verification of A Complete Bifocal Pair) (Duration : 11mins)

32. https://www.youtube.com/watch?v=7W_Enqp6diw (Round and Blended Bifocal Centration and Blocking) (Duration :11mins)
33. <https://www.youtube.com/watch?v=AZ6BuJrF4DY> (How To Use The Lensmeter - A Simple Spherical Single-Vision Lens) (Duration :11mins)
34. <https://www.youtube.com/watch?v=459zgvvp7js> (Lensometer/vertometer, the part iii neutralizing cylindrical lenses) (Duration :10mins)
35. <https://www.youtube.com/watch?v=fynqqasN0eo> (Bifocal Lenses Introduction & Types) (Duration :26 mins)
36. <https://www.youtube.com/watch?v=KdWqTxOvLWQ> (Visual Perception) (Duration :34 mins)
37. <https://www.youtube.com/watch?v=zAzaD5kTTgo> (Physiology of Visual Perception) (Duration :20 mins)
38. <https://www.youtube.com/watch?v=okXMpoxigq0> (Visual perception lecture) (Duration :37 mins)
39. <https://www.youtube.com/watch?v=XBqh08Wusk0> (Photometry) (Duration :53 mins)

Common Academic Orientation and Doubt Clearing Session

[4 hours]