University: Al Azhar
Faculty : Medicine
Department: Ophthalmology

Course Specification

1. Course Data		
Course Code :07-700-ophth-DOC	**Course Title:** Optics	**Academic Year / level**: MD Ophthalmology
Specialization:	**No. of Instructional Units:** **Lecture** 1.5hr/wk **Practical** 1hr/wk **Seminar 1hr/wk**	

2. Course Aim	The aim of the course is to provide the postgraduate with the advanced knowledge and skills through providing: • Recent scientific knowledge of optical principle of light, its properties and their application in modern ophthalmic practice as: ophthalmic instruments, visual aids, and refractive surgery. • Skills of effective communication. • Appropriate attitudes and professionalism. • Ability to engage in post- graduate and research studies.
3. Intended Learning Outcome (ILOs)	
a. Knowledge and Understanding:	**At the end of the program, the student should be able to:** A1. Recognize optical knowledge relevant to ophthalmic practice. A2. Understanding basic principle of vergence, accommodation, prisms, lenses and ray tracing, visual acuity testing and their application in patient's examination and in treatment as in: refractive surgery, low vision aids, prescribing glasses. A3. Identify principles of clinical audit. A4. Recent advances in the field of practice as in refractive surgery. A5. Design, conduction and publishing of scientific research.
b. Intellectual Skills:	**At the end of the program; the student should be able to:** B1. Integrate basic optical science with clinical care. B2. Reason deductively in solving clinical problems: a. Recognize, define and prioritize problems. b. Interpret, analyze, and evaluate information objectively,

	recognizing its limitations. B3. Use personal judgment for analytical and critical problem solving and seek out information. B4. Integrate the results of history, physical and investigational findings by using lenses, prisms, and ophthalmic instruments into a meaningful diagnostic formulation. B5. Construct appropriate management strategies for patients with refractive errors or poor vision including glasses, low visual aids and refractive surgical conditions. B6. Design an initial course for improvement of vision and treatment of amblyopia. B7. Retrieve, analyze, and evaluate relevant and current data from literature, using information technologies and library resources. B8. Recognize and cope with uncertainty that is unavoidable in the practice of medicine by accepting and reacting to uncertain situation through proper counseling, consultation and referral. B9. Be involved into research and scientific methods.
c. Professional Skills:	**At the end of the course; the students should be able to:** C1. Demonstrate basic optical sciences practical skills relevant to future practice. C2. Take and record a structured, patient centered history. C3. Perform full physical examination of patients with refractive error or poor vision. C4. Formulate a management plan by prescribing glasses, contact lens, prisms or surgery. C5. Record patients ' data appropriately. C6. Evaluate and improve methods and tools used in specialty and subspecialty. C7. Plan professional development courses to improve practice and enhance performance of juniors.
d. General Skills:	**At the end of the course ; the students should be able to:** D1. Be prepared for the lifelong learning needs of the medical profession. D2. Use information and communication technology effectively in the field of medical practice. D3. Retrieve, manage, and manipulate information by all means, including electronic means. D4. Present information clearly in written, electronic and oral forms. D5. Communicate ideas and arguments effectively. D6. Work effectively within a team and show ability to lead and direct the teamwork. D7. Analyze and use numerical data (including the use of simple statistical methods). D8. Manage scientific meeting.
4. Course Content	

Topics	Lectures	Clinical
Physical Optics	3	0
Vergence	1	1
Lenses and Ray Tracing	2	0
Visual Acuity Testing, Refractive Error	2	1

	Lens Effectively and Vertex Distance	2	1
	Accommodation and Prescribing Bifocals	2	1
	Astigmatism, Aberrations, Distortions and Irregularities	3	1
	Contact Lenses	1	1
	Refractive Surgery, Intraocular Lenses	1	0
	Magnification and Telescopes	2	1
	Low Vision	1	1
	Prisms	2	1
	Prescribing Glasses	2	1
	Opthalmic Instruments: Optical Principles	2	1

5. Teaching and Learning Methods	• Lectures and tutorials. • Practical and clinical cases. • Workshops. • Case Study.
6. Teaching and Learning Methods for Students with Special Needs	Not applicable
7. Student Assessment:	
a. Procedures used:	• Final written exam. • Final oral exam. • Final practical exam.
b. Schedule:	
c. Weighing of Assessment:	• Final written exam.: 100 degrees. • Final oral, practical, clinical exam.: 100 degrees.
8. List of Textbooks and References:	
a. Course Notes	
b. Required Books (Textbooks)	• Optics. **Bass M, Enoch JM, Lakshminarayanan V.** Handbook of Optics; Vision and Vision Optics 3rd ed. New York: The McGraw-Hill Companies 2010.
c. Recommended Books	• Optics, Retinoscopy,and Refractometry. **Ghai AK.** Refraction, Dispensing Optics and Ophthalmic Procedures. Jaypee Brothers Medical Publishers 2013. **Brooks CW, Borish IM.** System for Ophthalmic Dispensing 3rd ed. Philadelphia: Butterworth-Heinemann, 2007.
d. Periodicals, Web Sites, …, etc.	• British journal ophthalmology: http://www.BJO.com • Ophthalmology. • American journal ophthalmology. • Archieve Ophthalmology.

	• Egyptian journal ophthalmology: http://www.eos1902.com • Cataract and Refractive surgery. • http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1755-3768 • http://opthalmology.blogspot.com/ • http://pubmed.com

Course Instructor:

Head of Department:

Prof. Dr.

Date: 1/11/2014