



**Jordan University of Science and Technology**  
**Faculty of Applied Medical Sciences**  
**Department of Allied Medical Sciences**  
**Optometry**  
**First Semester 2020-2021**  
**Course Syllabus**

Course Information	
Course Title	Visual Optics Practicle
Course Code	OPT 205
Prerequisites	OPT 112
Course Credits	1
Course Website	

Course Description, Aims and Objectives
<p>This course includes the practical experiments in visual optics that should be introduced to optometry students to give them a background in optics in relation to the eye and ocular examination. The subject matter of this course comprises the application of geometric optics (that covered in the last semester) to the specific case of ophthalmic lenses, prisms and the eye. While the basic fact of clinical practice requires the diagnosis and treatment of different ocular pathology, the vast majority of patients you might see has no pathology indeed and is seeking vision care for refractive or binocular problems. Managing these two important practices (refraction and binocular vision) require the understanding and application of ophthalmic optics in basis of geometrical optics. The goal of this course is to teach the important properties of lenses and prisms as they affect the performance of the eye and eyeglass prescription.</p>

Textbook/s	
Title	Geometrical and Visual Optics: A Clinical introduction
Author(s)	Steven H. Schwartz
Publisher	Mc Graw Hill Education
Year	2013
Edition	Second Edition
Book Website	

Assessment		
Assessment	Expected Due Date	Percentage
Practicle work and quizzes	Throughout the semester	20%
Midterm Exam	7 <sup>th</sup> week	40%
Final Exam	At the end of the semester	40%
TOTAL		100%
Teaching and Learning Methods		
<p>Tutorial teaching method might be applied during the semester.  Clinical based exercises are at the end of each lecture for students to study for the next week.  Discussion and feedback are given at the beginning of each lecture.</p>		

#### Learning Objectives:

After studying the material covered in lectures, practical sessions, clinical seminars and case presentations of this course, the student is expected to achieve the following learning objectives:

Learning objectives	Weight
1. Application of law of refraction in spherical and cylindrical lenses and formation of image.	20%
2. Snell's law and its application in the image formation by refraction. The total internal reflection in the optically dense materials.	20%
3. Thin and thick lenses in optical instruments. Understanding the practical concept and application of spherical aberration.	20%
4. Understanding the practical aspect of formation and focusing of image in the eye. Understanding common vision defects using the defocus observation (near sight, and far sight defects), correction vision.	30%
5. Understanding the optical cross system and how to write a prescription.	10%

#### Learning outcomes:

After studying the material covered in lectures, practical sessions, clinical seminars and case presentations of this course, the student is expected to achieve the following learning outcomes:

	Learning outcome	References
1.	Problem-based learning approach to knowledge underpinning of optics in relation to the ocular system and instrumentation	Recommended text book/s and handouts
2.	Applying practical knowledge of image formation and focusing by different types of lenses.	Recommended text book/s and handouts
3.	Understanding refractive errors of the eye (Myopia, Hyperopia) and applying optics in correction of such visual defects.	Recommended text book/s and handouts

#### Lectures/topics:

Weeks	Lecture Topic	Specific learning objectives	References
1	Introduction to the course/vergence of light	1	handout
2	Image formed by Refraction and concepts of spherical aberration	2	handout

3	Image formation by convex and concave lenses	1,2	handout
4	Combination of two lenses.	3	handout
5	Critical angle and Total internal reflection	2, 3	handout
6	Prisms	4	handout
7	Prisms induce by lens displacement and prove of prentice rule	4	handout
8	Image formation the eye	3, 4	handout
9	The effect of defocus in image formation in the eye and the effect of correction	4,5	handout
10	The effect of defocus in image formation in the eye and the pin hole effect	4, 5	handout
11	Visual Acuity	5	handout
12	Optical Cross and writing a prescription	5	handout

Additional Notes	
Statement on Professionalism	Professional behavior is expected of students at all times. Attitude and professional behavior are a minimum criterion for passing this class. Examples of unprofessional behavior include but are not limited to: missing classes, tardiness, lack of attention for a speaker, talking to others during lecture, leaving a lecture prior to its completion without prior authorization of the instructor, working on other class material during class, and sleeping during class.
Cheating	University regulations will be applied on cases of cheating and/or plagiarism
Cell phone:	The use of cellular phone is prohibited in class rooms and during exams. The cellular phone must be switched off in class rooms and during exams.
Attendance	No points will be count for points attendance of this class, however attending the lectures will greatly enhance your grade. The student is responsible for any information discussed in lecture sessions. It is imperative to attend all classes!
Absences:	University regulations will be applied. Students are not allowed to be absent for more than 20% of lectures for any reason or excuse. If a student exceeds the absence limit, he or she will not be allowed to sit for future course exams. (Please review university regulation for more details)
Make-up Exam	Make-up exams is entitled for students who miss the exam with accepted legal or medical excuse endorsed by the instructor within 24 hours after the scheduled exam (Please review university regulation for more details)
Feedback	Concerns, complaints, questions, and/or feedback are appreciated and will be important for the instructor. You can contact your instructor using the e-mail or during office hours

kindest Regards

2nd edition. © McGraw-Hill Education, 2013. © 382 p. © ISBN 978-0-07-179083-3. Geometrical and Visual Optics, Second Edition is a rigorous, yet highly accessible text that expertly combines basic optics with clinical applications in a way that brings key optometry topics to life. It emphasizes a vergence approach to geometrical and visual optics, reinforcing its fundamental utility in clinical practice. Featuring an open, workbook-style design, the book avoids unnecessary math and focuses on those optical concepts and problem-solving skills that are the cornerstones of contemporary clinical eye for 2015. Geometrical and Visual Optics, Second Edition is a rigorous, yet highly accessible text that expertly combines basic optics with clinical applications in a way that brings key optometry topics to life. It emphasizes a vergence approach to geometrical and visual optics, reinforcing its fundamental utility in clinical practice. - Jeff Rabin, Optometry and Vision Science Geometrical and Visual Optics: A Clinical Introduction. 4. download last page !!!! 5. download here !!!! Geometrical and Visual Optics: A Clinical Introduction. Recommended. With years of clinical, academic, and research experience, Dr. Steven Schwartz has crafted an essential optics text for optometry interns and ophthalmology residents alike: Geometrical and Visual Optics, A Clinical Introduction, 2nd ed. Not a fan of countless equations, Dr. Schwartz emphasizes the vergence relationship ( $L + F = L\hat{L}^2$ ), along with other key formulae to solve the vast majority of clinical optical problems. This utilitarian approach is the premise for his concise, thoroughly readable text. Understand basic concepts, retain key formulae, and apply them clinically. Text is to the poin