

THEORETICAL AND LABORATIONAL SUPPORTIVE LEARNING TOOLKIT FOR REFRACTION OF LIGHT IN DIFFERENT MEDIUMS

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With the growth of physics education as a research field and the ongoing desire there is an urgency to improve learning of introductory physics courses with an integrated toolkit. An endeavour has made to develop a learning toolkit for the purpose of centralized self-learning in the area of optics. This versatile software toolkit has been developed using C# language in Visual Studio 2010 platform. Help documentation has been developed using pdf writer. The software toolkit requires windows based operating system to work properly. Refraction of light means the change in the direction in a light ray when it crosses boundary between two transparent substances. This toolkit provides both theoretical based materials and practical based components about refraction of light ray in a structured way. Theory based materials are organized based on the mainstream theory categories of refraction. Each of the broad categories are summarized and divided into sub categories, including details with suitable examples. Some of the related topics are linked externally for the referential purpose of the learners. As a part, it includes self-evaluation components. Classroom practical, a standard component of physics related courses in schools and universities, are commonly believed to help students learn science and to stimulate students' interest. This toolkit enables to do practical works related to refraction of light with the help of well-organized software components. Each component provides simulation of particular practical work with expected outputs. This toolkit has well organized searching facility for both theory and practical materials, enabling the faster access of course materials and practical components. Detailed help documentation is provided within this toolkit for the purpose of easy usage of the toolkit. This toolkit is very much output oriented providing graphical and analytical outputs accurately. As a result learners get knowledge on both categories by spending less time compared to other available learning methods and get practical experience without having physical equipment.

Keywords: Documentation, Integrated toolkit, Refraction, Simulation, Visual studio 2010