

# Physics Education Department

## Introduction to the MSc Qualification Exam Study Guide

To help candidates prepare effectively, a selection of key areas and recommended books has been identified. These resources cover fundamental topics in the field. However, students are encouraged to explore additional sources that address the same areas to broaden their understanding and enhance their knowledge.

Areas included in the Physics Qualification exam for the following specializations:

### 1- Materials Science

- Quantum Mechanics  
*Book recommended:* Griffiths, D.J. and Schroeter, D.F., 2019. Introduction to quantum mechanics. Cambridge university press.
- Nuclear Physics  
*Book recommended:* Das, Ashok, and Thomas Ferbel Introduction to nuclear and particle physics. World Scientific, 2003.
- Electromagnetic Theory  
*Book recommended:* Bakshi - Electromagnetic Field Theory-Technical Publications (2009)
- Solid State Physics  
*Book recommended:* Hofmann, Philip. Solid state physics: an introduction. John Wiley & Sons, 2022.
- Materials Science  
*Book recommended:* *Fundamentals of Materials Science for Technologists: Properties, Testing, and Laboratory Exercises, Third Edition 3rd Edition*

### 2- Medical Physics

- Quantum Mechanics  
*Book recommended:* Griffiths, D.J. and Schroeter, D.F., 2019. Introduction to quantum mechanics. Cambridge university press.
- Nuclear Physics  
*Book recommended:* Das, Ashok, and Thomas Ferbel Introduction to nuclear and particle physics. World Scientific, 2003.
- Electromagnetic Theory  
*Book recommended:* Bakshi - Electromagnetic Field Theory-Technical Publications (2009)
- Solid State Physics  
*Book recommended:* Hofmann, Philip. Solid state physics: an introduction. John Wiley & Sons, 2022.
- Nuclear Medicine  
*Book recommended:* Simon R. Cherry, James A. Sorenson, and Michael E. Phelps-Physics in Nuclear Medicine – 4<sup>th</sup> edition

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### 3- Communication Physics

- Quantum Mechanics  
*Book recommended:* Griffiths, D.J. and Schroeter, D.F., 2019. Introduction to quantum mechanics. Cambridge university press.
- Nuclear Physics  
*Book recommended:* Das, Ashok, and Thomas Ferbel Introduction to nuclear and particle physics. World Scientific, 2003.
- Electromagnetic Theory  
*Book recommended:* Bakshi - Electromagnetic Field Theory-Technical Publications (2009)
- Antenna Theory  
*Book recommended:* Constantine A. Balanis - Antenna Theory: Analysis and Design – 3<sup>rd</sup> Edition
- Optics  
*Book recommended:* Pedrotti, Frank L., Leno M. Pedrotti, and Leno S. Pedrotti. Introduction to optics. Cambridge University Press, 2018.

### 4- Nuclear Physics

- Quantum Mechanics  
*Book recommended:* Griffiths, D.J. and Schroeter, D.F., 2019. Introduction to quantum mechanics. Cambridge university press.
- Nuclear Physics  
*Book recommended:* Das, Ashok, and Thomas Ferbel Introduction to nuclear and particle physics. World Scientific, 2003.
- Electromagnetic Theory  
*Book recommended:* Bakshi - Electromagnetic Field Theory-Technical Publications (2009)
- Solid State Physics  
*Book recommended:* Hofmann, Philip. Solid state physics: an introduction. John Wiley & Sons, 2022.
- Radiation Protection and Dosimetry  
*Book recommended:* Michael G. Stabin - Radiation Protection and Dosimetry: An Introduction to Health Physics - 2007th Edition