PES UNIVERSITY ONLINE

ENGINEERING PHYSICS

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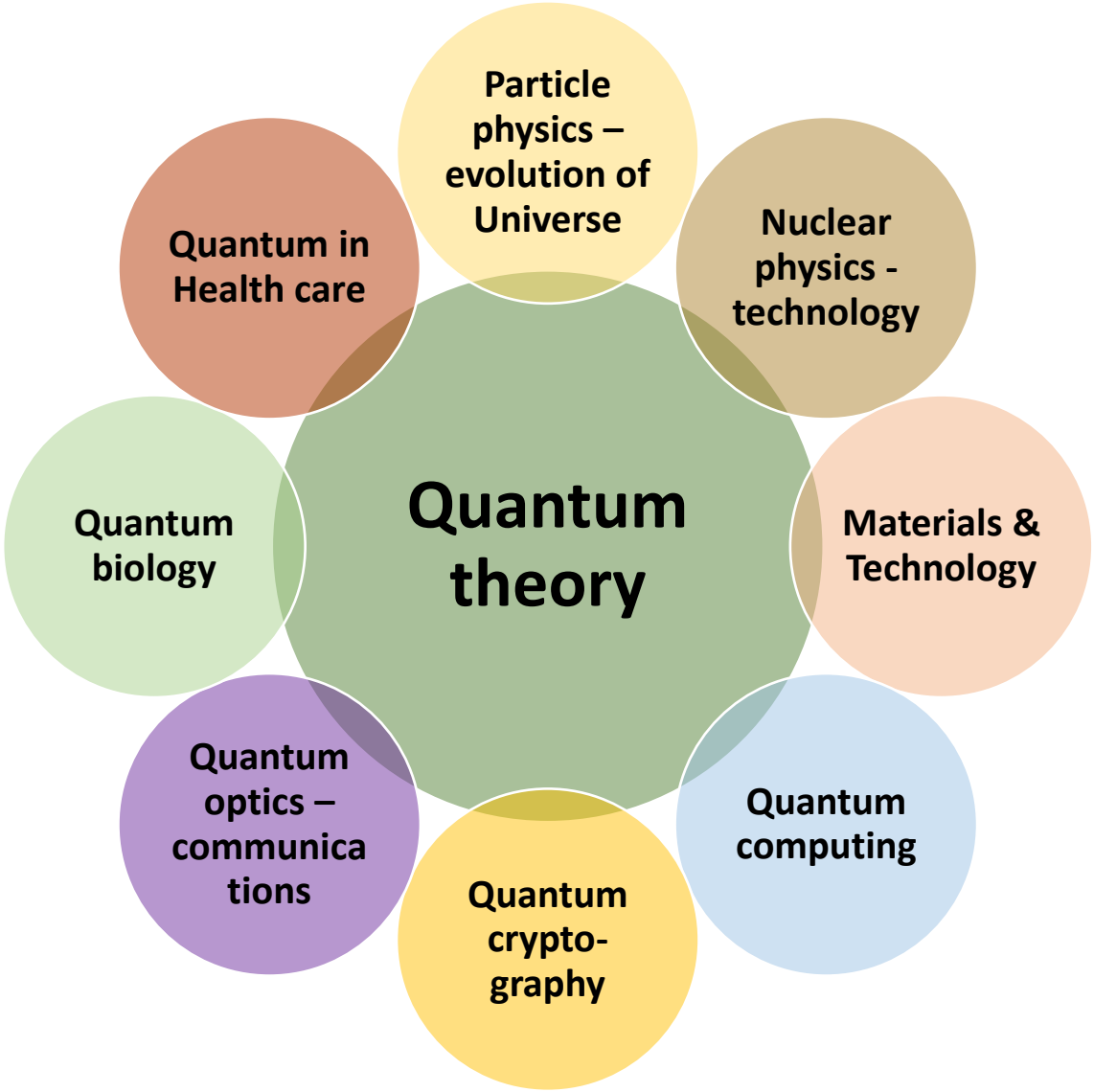
Department of Science and Humanities

ENGINEERING PHYSICS

Quantum theory impacts …….



The universe is quantum by nature…..

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Relevance of this course to engineering and technology

- **Rapidly evolving technology solutions in small sizes**
  - **3 – 5nm VLSI chips**
  - **Quantum dot lasers**
  - **High resolution GPS**
  - **Medical imaging devices**
  - **High density storage devices ……..**
- **Quantum computing**
  - **Quantum entanglement**
  - **QUBITS**
  - **Quantum computing**

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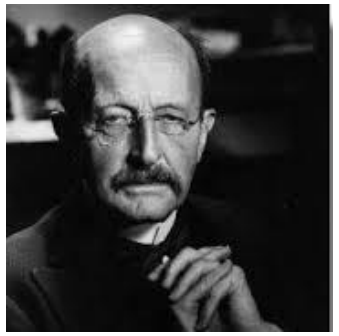
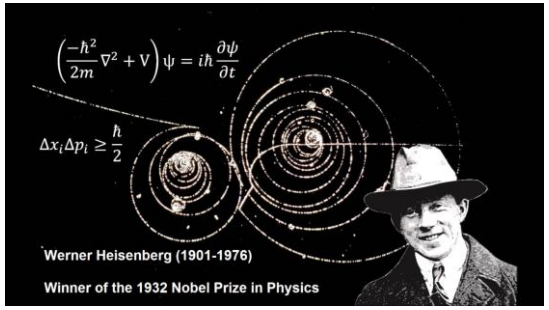
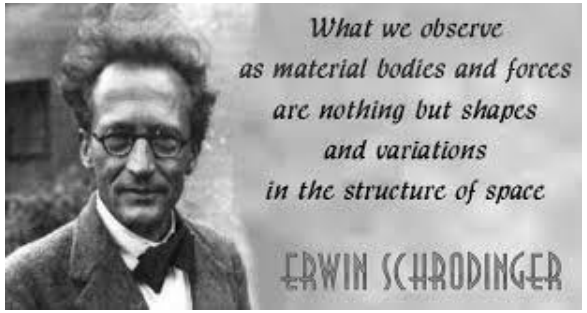
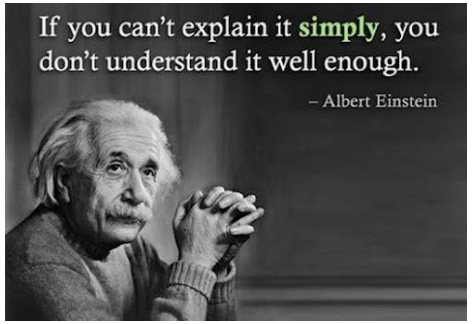
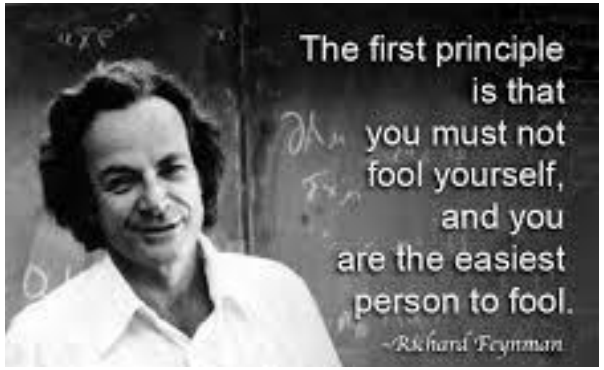
The galaxy of scientists ……











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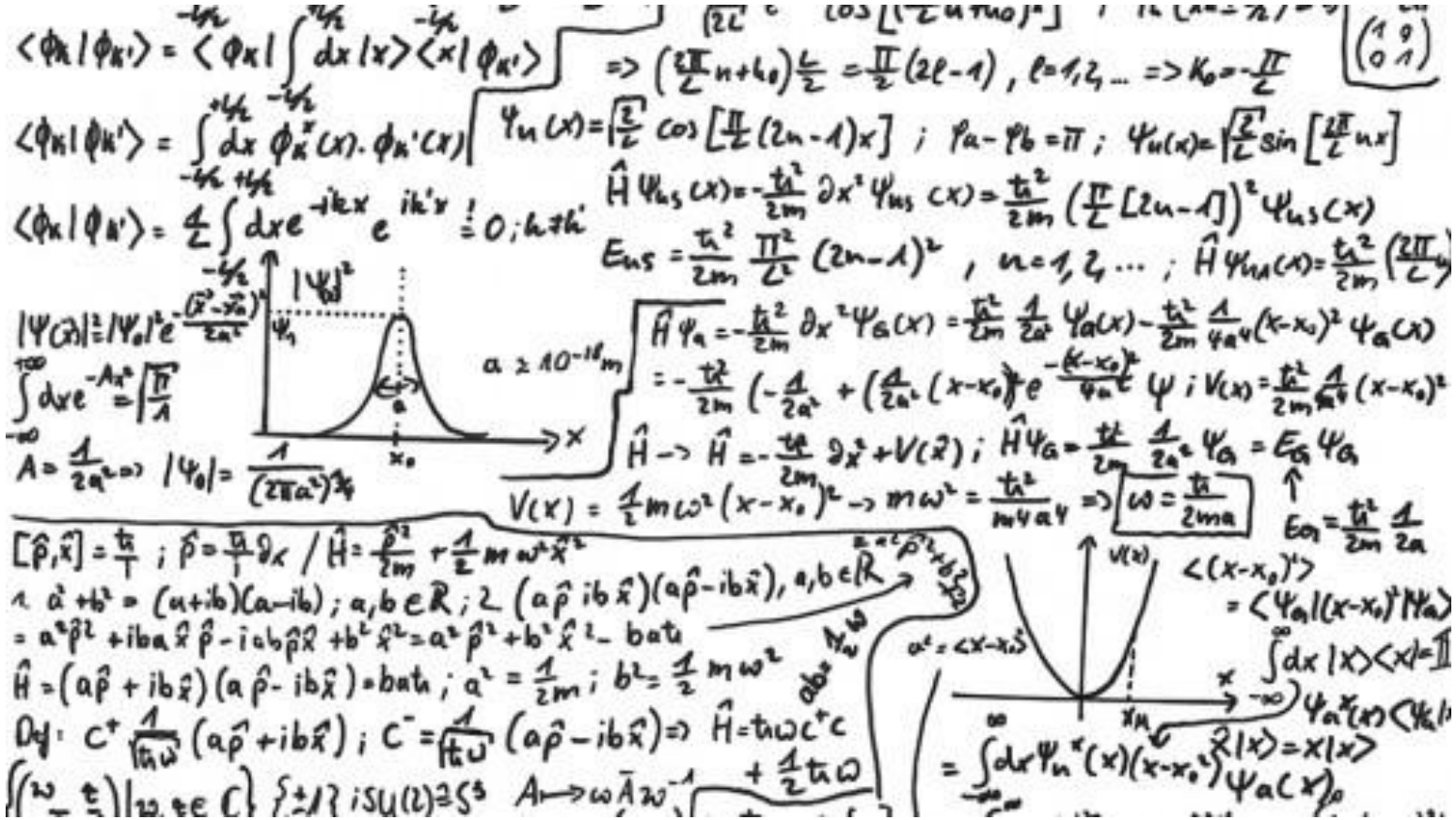
The simple mathematics…..



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What you need to know….

Prerequisites:

1. C grade in the Physics course at the 11^{th} and 12^{th} grade
2. A good understanding of EM waves and Modern Physics topics in the 11^{th} and 12^{th} grade
3. Basics ideas of Mathematics - differential equations and their solutions, concepts of integration, exponential functions, series expansions, fundamental concepts of Probability (11^{th} and 12^{th} grade)

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Course content .....

Unit I: Review of concepts leading to Quantum Mechanics

Unit II: Quantum Mechanics and Simple Quantum Mechanical Systems

Unit III: Application of Quantum Mechanics to electrical transport in Solids

Unit IV: Application of Quantum Mechanics to Optical waves

Unit V: Quantum mechanical treatment of Magnetics and Dielectrics

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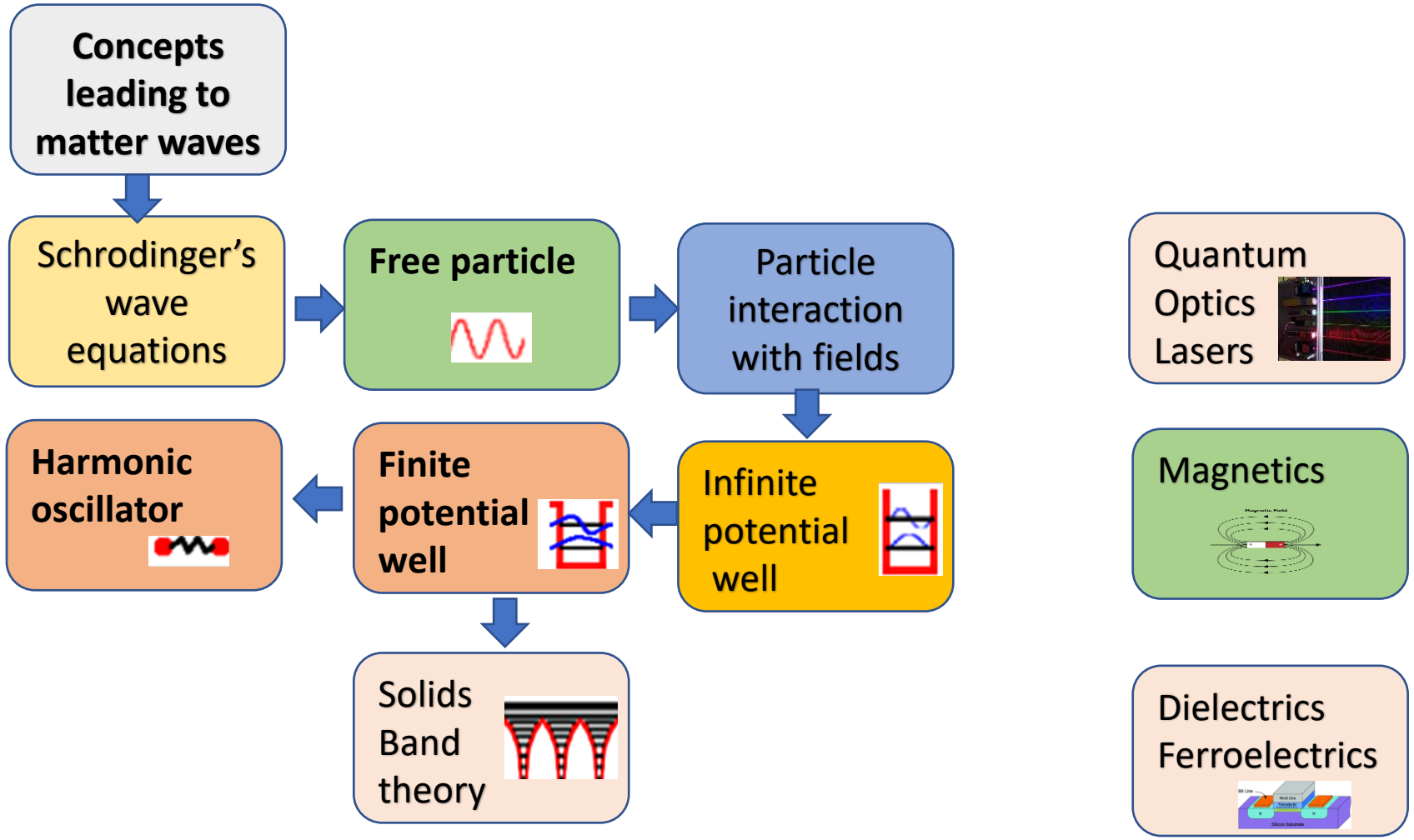
The flow ……..



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What will help you ….

- ***Suggested Textbook:***
  1. ***Concepts of Modern Physics, Arthur Beiser, Chapters 1,2,3,5 and 10***

- ***Additional reference:***
  1. ***Learning materials prepared by the Department of Physics***
  2. ***"Quantum Physics of Atoms Nuclei and Molecules", Robert Eisberg, Robert Resnick, Wiley, 2006.***
  3. ***"Quantum Physics", S Gasiorowicz, 3rd Edition, Wiley Publications, 2007***
  4. ***"Lectures on Physics", Feynman, Leighton and Sands, Vol. 1-3, 13th Reprint,*** **Narosa Publications, 2012**

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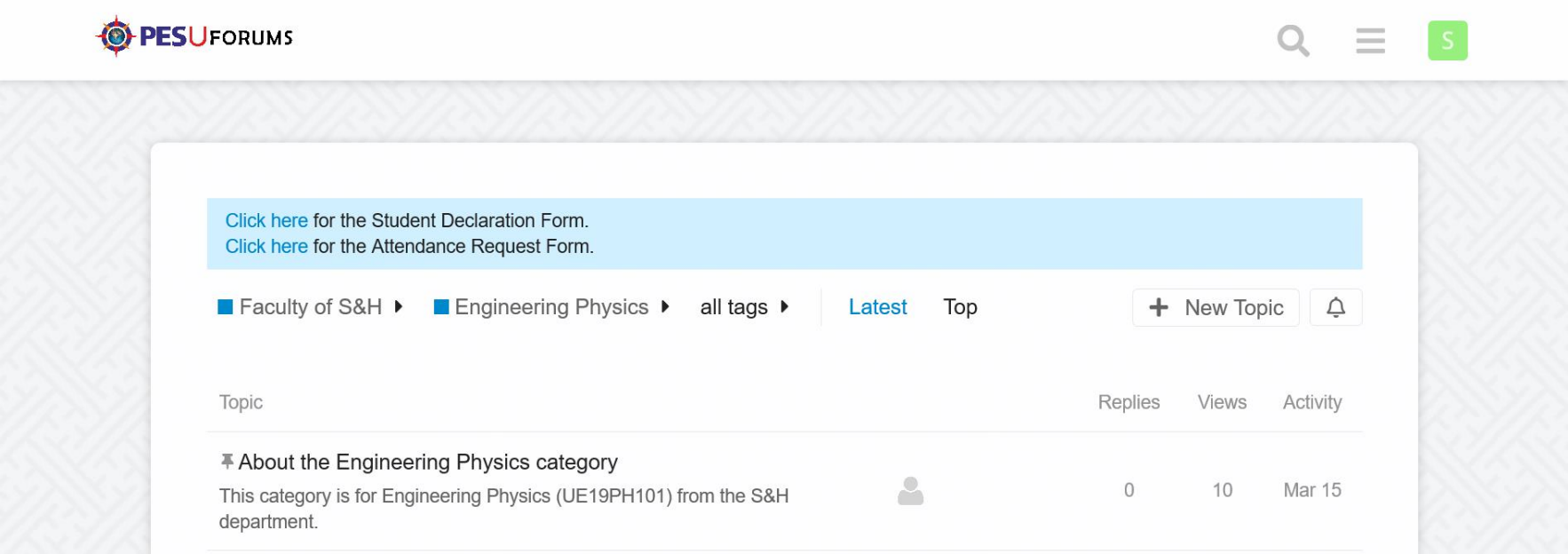
Discussion forum ……

➢ ***https://forum.pesu.io/***



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The grading mechanism …….

In Semester Assessment :

Quiz:

- **Self assessment quiz at the end of every class**

Assignments at the end of every week with deadlines (10m)

- **MCQ's, Numericals, Short answers**

Internal Assessment tests

- **Two Computer based tests end of week #6 and week #12 of 50/60 minutes duration (15m each)**

End Semester Assessments

- **Pen and paper examination of 3hrs duration (100m)**

Final Grading = 40%ISA + 60%ESA

THANK YOU

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