Subject Areas for Qualifying Examination:

- Circuits and Devices
- Electromagnetics and Optics
- Quantum Mechanics and Solid State Physics

1) Subject Area: “Circuits and Devices”

**Syllabus:** Material covered in ECE 4530 (Analog Integrated Circuit Design) and material covered in ECE 4570 (Silicon Device Fundamentals)

Material covered in ECE 4530 can be found in the following course textbook:
- **Title:** Design of Analog CMOS Integrated Circuits (all chapters)
- **Author:** Behzad Razavi
- **Publisher:** McGraw-Hill Education

Material covered in ECE 4570 can be found in the following course textbook:
- **Title:** Device Electronics for Integrated Circuits (all chapters)
- **Author:** R. S. Muller and T. I. Kamins
- **Publisher:** Wiley

2) Subject Area: “Electromagnetics and Optics”

**Syllabus:** Material covered in ECE 3030 (Electromagnetic Fields and Waves) and material on fundamentals of optics and photonics.

Material covered in ECE 3030 can be found at the following course website:
https://courses.cit.cornell.edu/ece303/ (all lecture handouts)

Material on optics can be found in the following book:
- **Title:** Integrated Photonics (all chapters)
- **Author:** Clifford Pollock and Michal Lipson
- **Publisher:** Springer

3) Subject Area: “Quantum Mechanics and Solid State Physics”

**Syllabus:** Material covered in ECE 4070 (Solid State Physics of Semiconductors and Nanostructures) and material on introductory quantum mechanics.

Material covered in ECE 4070 can be found at the following course website:
https://courses.cit.cornell.edu/ece407/ (all lecture handouts)

Material on introductory quantum mechanics can be found in the following book:
- **Title:** Introduction to Quantum Mechanics (Chapters 1 through 9)
- **Author:** David J. Griffiths
- **Publisher:** Pearson Prentice Hall