Offered again after 3 years of absence. Revised and renewed!

ECE 452: EM Waves and Photonics

EM waves, polarizations, and applications to photonic and electro-optical devices, optical waveguides. Extended to cover practical applications of EM concepts to photonic integrated circuits.

- **EM waves**: propagation, reflection, transmission, multilayered media, matrix optics
- **Waveguide optics**: waveguides, fibers, dispersion, attenuation
- **Passive devices**: directional couplers, optical ring resonators and add-drop filters
- **Active devices**: amplitude modulators, phase modulators, photodetectors
- **Integrated photonic circuits** for optical communications

**Instructor**: Yurii Vlasov, John Bardeen Chair Professor, inventor of silicon photonics

[https://courses.grainger.illinois.edu/ece452/fa2023/](https://courses.grainger.illinois.edu/ece452/fa2023/)  
Pre-requisite: ECE350