

Unlock the Future with Digital Communications!

Course Title: ELEN E4702 - Digital Communications

Instructor: Alexei Ashikhmin, Ph.D., IEEE Fellow, Bell Labs Fellow

Why Take This Course?

In today's rapidly evolving tech landscape, a deep understanding of digital communications is essential for driving innovation in modern engineering and research. From 5G/6G networks and satellite systems to Internet of Things and Networks on Chip, this course will give you the tools and knowledge to thrive in a connected world.

This course is specifically designed for high-level undergraduate and graduate students seeking to master the principles and applications of digital information transfer.

Why This Course Matters for Your Career

Knowledge of digital communications is highly sought after by prestigious companies such as Apple, Google, Qualcomm, Verizon, Ericsson, and hundreds of startups. Mastering these concepts will give you a competitive edge in securing roles in cutting-edge technology and innovation.

What You'll Learn

- **Foundations of Digital Communications:** Data Compression algorithms, Signal Design and Signal Processing algorithms for communication over noisy channels, modern Forward Error Correction techniques.
- **Cutting-Edge Topics:** Neural Networks for communication systems, OFDM, and Massive MIMO for 5G/6G.
- **Real-World Applications:** Hands-on examples and case studies from global technology leaders.

Course Features

- **Engaging Lectures:** Led by Prof. Alexei Ashikhmin, a world-renowned researcher and inventor with over 46 US patents, 70 journal publications, and 17,000+ citations.
- **Career-Boosting Insights:** Learn the tools and skills demanded by top companies like Nokia Bell Labs, Google, and beyond.

Who Should Enroll?

- High-level undergraduate and graduate students in Electrical Engineering, Computer Science, or Physics.

Details at a Glance

- **Duration and Format:** 14 in-person lectures and regular office hours.
- **Prerequisites:** Basic knowledge of probability theory, calculus (including integrals, derivatives and trigonometric functions), linear algebra (matrix and vector multiplication, matrix inversion, and related topics), and arithmetic with complex numbers.

Questions? Email me at aa2354@columbia.edu or alexei.ashikhmin@nokia-bell-labs.com