

# CERTIFICATE OF COMPLETION



This Certificate is Presented To

**Prab Randhawa**

**For completion of the Winter 2024 NECSI Course in Complexity**

This course provided an introduction to essential concepts of complex systems and related mathematical methods and simulation strategies with application to physical, biological, and social systems. This was done via live lectures, recorded lectures, team assignments, and guest speakers.

Concepts covered included: emergence, complexity, networks, self-organization, pattern formation, evolution, adaptation, fractals, chaos, cooperation, competition, attractors, interdependence, scaling, dynamic response, information and function.

A handwritten signature in black ink, appearing to read 'Yaneer Bar-Yam', is positioned above a horizontal line.

**Prof. Yaneer Bar-Yam**

President and Founder, NECSI