

# NC A&T QISE Final Topics

April 22, 2023

## 1 Theory Topics

- single qubit states/gates
- measurement of a quantum state
- matrix multiplication and its relevance to gates/states
- matrix operations (transpose, conjugate, hermitian conjugate)
- using Bloch sphere to visualize states
- multi qubit states/gates
- writing multi qubit states/gates with tensor products
- notion of entanglement

## 2 Coding Topics

- (numpy) creating matrices/vectors
- (numpy) doing matrix multiplication/operations
- (qiskit) initializing quantum circuits
- (qiskit) adding gates to a circuit with
- (qiskit) drawing a circuit
- (qiskit) how/when to use different backends for simulation
- (qiskit) how to plot states on the Bloch sphere
- (qiskit) running a quantum circuit and printing the results