

# Course Plan and Evaluation Policy.

Course Code: CS 4028

Course Name: **Quantum Computation.**

Class: Room No. ELHC 403.

Semester: January – April 2019.

## *Course Objectives:*

1. To design simple circuits with quantum gates.
2. Prove correctness of simple quantum circuits.
3. Mathematically analyze the functioning of some well known quantum algorithms

## *Content Summary:*

The first part of the course will review the the basic linear algebraic framework and principles of quantum mechanics that form the foundation of quantum computing. The next part will cover basic quantum gates and circuits and measurement principles. The last part will discuss the solution to some classical problems like fourier transform computation with quantum circuits, and some of the consequences like polynomial time factorization.

## Evaluation Policy:

There will be three tests and several assignments. Assignments will be posted through the course forum. There will be no explicit credits for assignments, but there will be questions from the assignments in the examinations. The weightage of tests are as follows:

Test 1: 30%, Test 2: 30%, Test 3 (Final Examination): 40%. Relative grading will be followed.

## **References:**

1. M. A. Nielsen and I. L. Chuang, Quantum Computation and Quantum Information, Cambridge University Press, 2002.
2. J. Gruska, Quantum Computing, McGraw Hill, 1999.
3. A. Peres, Quantum Theory: Concepts and Methods, Springer, 1993.