

## **Syllabus (Content) of CMSC 452- Elementary Theory of Computation**

1. Countable and uncountable sets (this may be a review for some of you).
2. Regular Languages: DFA's, NFA's, Regular expressions, pumping lemma. Application to Decidability in Logic.
3. Context Free Languages.
4. Time complexity.  $\text{DTIME}(T(n))$ . Time Hierarchy Theorem.
5. P and NP: Cook-Levin Theorem (SAT is NP-complete). Reductions. Some Complexity Theory.
6. Decidable and enumerable Languages: Turing Machines and the HALTING problem.