

CS-509 Tentative Syllabus

Professor Joe Kilian

September 5, 2006

- September 5:** Languages and sets, regular languages, probabilistic automata.
- September 12:** Quantitative analysis of automata, pushdown automata and context free languages
- September 19:** Turing machines, Church's thesis, undecidability, recursive enumeration.
Homework #1 due
- September 26:** Reductions, completeness and the undecidability of simple problems.
- October 3:** The recursion theorem, decidability of logical theories
Homework #2 due
- October 10:** Time complexity, NP-completeness.
Take-home Midterm exam distributed
- October 17:** Space complexity, Savitch's theorem
Take-home Midterm exam due
- October 24:** Two theorems on space complexity.
- October 31:** Hierarchy Theorems, Alternating Time and Space
Homework #3 due
- November 7:** Interactive Proof Systems
- November 14:** Hardness of Approximation
Homework #4 due
- November 28:** The PCP theorem and applications
- December 5:** Topics: Quantum Computation
Take-home final distributed
- December 12:** Topics: Sublinear Algorithms
Take-home final due