EE-614: THEORY & METHODS OF LINEAR INVERSE PROBLEMS			
WEEK	MONDAY (Recitation)	WEDNESDAY (Lecture)	FRIDAY (Lecture)
Week 01 Sep 17 - 21		Motivation and Logistics	***Introduction*** to vector and matrix norms, metrics and operator norms
Week 02 Sep 24 - 28	***CVX introduction***	***Sparsity and compressibility***, best k-term approximation, weak l_p atomic representations	***Tractability and sample complexity of sparse recovery***, minimal number of samples, NP-hardness of the problem
Week 03 Oct 01 - 05	***Introduction to convex analysis***	***Low-dimensional models***, a convex criteria for recovery, geometric insights	***Convex algorithms for LDMs***, convex projectors, majorization-minimization
Week 04 Oct 08 - 12	***Convex problems***	***Convex algorithms for LDMs contd.***, convex projectors, majorization-minimization	***Algorithm efficiency***, convergence rates, acceleration techniques, a map of algorithms
Week 05 Oct 15 - 19	***Matrix functions***	***Algorithm efficiency contd.***, Augmented Lagrangian methods (ALM) and inexact ALM	***Special linear maps-I***, l_2-norm restricted isometry property (RIP-2), Johnson-Lindenstrauss embeddings, proof of RIP-2
Week 06 Oct 22 - 26	***Tools from Probability Theory***	***Special linear maps-II***, l_1-norm restricted isometry property (RIP-1), random matrix theory, summary of special matrices	***Analysis of a convex sparse algorithm***, RIP2-analysis of BP, Risk analysis of Lasso
Week 07 Oct 29 – Nov 02	***Submodularity, matroids, approx. submodularity analysis of OMP***	***LDMs from a discrete perspective***, non-convex projectors, majorization-minimization	***Greedy algorithms***, MP and OMP, basic acceleration techniques
Week 08 Nov 05 - 09	***Submodular polyhedra, Lovacz extension***	***Beyond sparsity-I***, basic discrete models (TU), reduction in samples for RIP	***Beyond sparsity-II***, group based models, max-cover, knapsack...
Week 09 Nov 12 - 16	***O(n) algorithms for simplex or l_1, alternating proximal method***	***Beyond sparsity-III***, regularization via submodular norms, min norm point algorithm	***Beyond sparsity-IV***, sparse and simplex constraints or Quantum tomography, sparse and norm constraints
Week 10 Nov 19 - 23	***Count min/median sketch algorithms***	***Algorithms for huge dimensions-I & II***, stochastic methods & sparse matrices respectively	***Algorithms for huge dimensions-III***, greedy algorithms (OMP), Lazy evaluation method, map reduce distributed procedures (Hadoop)
Week 11 Nov 26 – 30	***Non-convex problems***	***Other non-convex algorithms-I***, reweighted l_1/l_2 algorithms, l_p-minimization ($0<p<1$)	***Other non-convex algorithms-II***, minimax GAME algorithm
Week 12 Dec 03 - 07	***Finite rate of innovation***	***Sparsity in a continuous domain-I***, impact of gridding	***Sparsity in a continuous domain-II***, super resolution
Week 13 & 14 Dec 10 - 21	***Project presentations***		