List of Relevant Courses Taken

Undergraduate Courses (The Bhawanipur Education Society College, University of Calcutta, Kolkata)
(2017-2020)

No.	Course	Year	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
1	Classical Algebra, Modern Algebra I	1	Prithwi Bagchi, Subhabrata Ganguly, Tamalika Dutta	32/50	Theory of Polynomials, Elementary Number Theory, Algebraic Structures, Introduction to Group Theory	Higher Algebra (Classical) (SK Mapa), Elementary Number Theory (David M Burton), Higher Algebra (Abstract & Linear) (SK Mapa), Topics in Algebra (IN Herstein), Abstract Algebra (Dummit, Foote)
2	Analytic Geometry, Vector Algebra	1	Soumyi Chowdhury, Pradip Dutta Gupta	40/50	2D co-ordinate geometry, 3D co-ordinate geometry, Collinearity, coplanarity, scalar product, vector product, vector equations, shortest distance between skew lines	Advanced Analytic Geometry (Chakravorty, Ghosh), Vector Analysis: Vector Algebra & Vector Calculus (Chakravorty, Ghosh)
3	Analysis I, Integral Calculus	1	Sugata Adhya, Tamalika Dutta	40/50	Introduction to Real Numbers and Point Set Topology, Countability, Sequences, Limits, Continuity of real-valued functions, Bounded functions, Uniform continuity, Evaluation methods of indefinite and definite integrals	Real Analysis (SK Mapa), Real Analysis (Bartle Sherbert), Principles of Mathematical Analysis (Rudin), Calculus (KC Sinha), Notes
4	Linear Algebra I, Vector Calculus I	1	Nirabhra Basu	19/50	Matrices and Determinants, Elementary row operations and congruences, System of equations, Vector spaces, Inner product spaces, Eigenvalues and eigenvectors, Vector differentiation, Scalar and vector fields, Directional Derivatives, Gradient	Higher Algebra (Abstract & Linear) (SK Mapa), Linear Algebra & It's Applications (Gilbert Strang), Linear Algebra (Friedberg), Vector Analysis: Vector Algebra & Vector Calculus (Chakravorty, Ghosh)
5	Modern Algebra II, Linear Programming and Game Theory	2	Nirabhra Basu, Pradip Dutta Gupta	38/50	Lagrange's theorem, Cyclic groups, Generators, Permutation groups, Group actions, Introduction to Ring Theory, Solutions to Linear Programming Problems, Feasibility and Optimality, Two-phase method, Degeneracy, Duality Theory, Transportation and Assignment problems, Concepts in Game Theory	Higher Algebra (Abstract & Linear) (SK Mapa), Topics in Algebra (IN Herstein), Abstract Algebra (Dummit, Foote), Linear Programming & Game Theory (Chakravorty, Ghosh), Notes
6	Analysis II, Differential Equations I	2	Sugata Adhya, Tamalika Dutta	26/50	Series of real numbers, Differentiation of real-valued functions, First order equations, Second order linear equations, Geometric applications, Higher order linear equations, Simple eigenvalue problems, Introduction to Partial Differential Equations	Real Analysis (SK Mapa), Real Analysis (Bartle Sherbert), Principles of Mathematical Analysis (Rudin), An Introduction to Differential Equations (Ghosh, Maity), Differential Equations (SL Ross)

No.	Course	Year	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
7	Multivariable Calculus, Application of Calculus	2	Soumyi Chowdhury	22/50	Topology of R^n, Multivariable functions, Partial derivatives, Differentiation, Jacobian, Implicit and Inverse function theorem, Taylor's series, Lagrange's multipliers, Tangents and Normals, Asymptotes, Curvature, Envelopes, Critical points, Determination of moments and products of inertia	Multivariable Analysis (Shirali), Advanced Differential Calculus of Several Variables (SK Mukherjee), Calculus on Manifolds (Spivak), Application of Calculus (Bandyopadhyay, Maity)
8	Analytic Geometry II, Analytical Statics I, Analytical Dynamics I	2	Subhabrata Ganguly, Nirabhra Basu, Soumyi Chowdhury	33/50	Spheres, Cones, Cylinders, Ellipsoid, Paraboloid, Hyperboloid, Tangent planes, Normals, Enveloping cone, Surface of Revolution, Cylindrical, Polar and Spherical coordinates, Friction, Astatic Equilibrium, Laws of Motion and Gravitation, Kinematics, Circular motion, Damped harmonic oscillator	Advanced Analytic Geometry (Chakravorty, Ghosh), Analytical Statics (Pradhan, Sinha), Advanced Analytical Dynamics (U Chatterjee)
9	Analysis III	3	Sugata Adhya	49/50	Compactness and Connectedness in R, Bounded variation, Riemann-Stieltjes integration, Sequence and Series of functions of a real variable	Real Analysis (SK Mapa), Real Analysis (NL Carothers), Principles of Mathematical Analysis (Rudin)
10	Linear Algebra II, Modern Algebra III, Tensor Calculus, Graph Theory	3	Nirabhra Basu, Soumyi Chowdhury	50/50	Linear transformations, Rank-Nullity Theorem, Quadratic forms, Normal Subgroups, Quotient groups, Isomorphism theorems, Contravariant and covariant tensors, Symmetric and skew-symmetric tensors, Outer and Inner products of tensors, Reciprocal metric tensor, Christoffel symbols, Walks, Paths, Cycles, connected graph, Complete graph, Bipartite graphs, Euler graphs, Planar graphs, Trees	Higher Algebra (Abstract & Linear) (SK Mapa), Topics in Algebra (IN Herstein), Abstract Algebra (Dummit, Foote), Tensor Calculus (Schutz), Graph Theory (Bondy & Murty)
11	Vector Calculus II, Analytical Statics II, Analytical Dynamics II	3	Nirabhra Basu	46/50	Line integrals, Surface integrals, Green's theorem, Stokes' theorem, Gauss divergence theorem, Centre of gravity, Virtual work, Stable and unstable equilibrium, Forces in 3D, Equilibrium, Central forces and central orbits, Planetary motion and Kepler's laws, Varying mass problems, Linear dynamical systems	Vector Analysis: Vector Algebra & Vector Calculus (Chakravorty, Ghosh), Analytical Statics (Pradhan, Sinha), Advanced Analytical Dynamics (U Chatterjee)

No.	Course	Year	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
12	Hydrostatics, Rigid Dynamics	3	Subhabrata Ganguly	25/50	Fluids, Centre of pressure, Equilibrium, Rotating fluids, Stability of equilibrium of floating bodies, Pressure of gases, Momental ellipsoid, Equimomental system, Equations of motion of a rigid body	Hydrostatics (JM Kar), Advanced Analytical Dynamics (U Chatterjee)
13	Analysis IV, Metric Space, Complex Analysis	3	Sugata Adhya, Soumyi Chowdhury, Nirabhra Basu	49/50	Improper integrals, Beta and Gamma functions, Fourier series, Multiple integrals, Metric spaces, Convergence, Continuity, Completeness, Compactness, Connectedness, Stereographic projection, Limit, continuity and differentiability of complex functions, Cauchy-Riemann equations, Harmonic functions	Real Analysis (SK Mapa), Real Analysis (Bartle Sherbert), Topology of Metric Spaces (Kumaresan), Real Analysis (NL Carothers), Functions of One Complex Variable (Conway), Complex Variables and Applications (Churchill, Brown)
14	Probability, Statistics	3	Pradip Dutta Gupta, Subhabrata Ganguly	50/50	Classical Probability including random variables, Probability distributions, Characteristic function, Expectation, Law of large numbers, Central limit theorem, Mean, Median, Mode, Regression, Test of hypothesis	Probability & Statistics (Arnab Chakraborty), Fundamentals of Statistics (Gun, Gupta, Dasgupta)
15	Numerical Analysis, Computer Programming, Practical	3	Anwesha Roy, Pradip Dutta Gupta	85/100	Errors, Operators, Interpolation, Numerical differentiation, Numerical integration, Numerical solutions of equations, Data types, Boolean algebra, Numerical analysis problems using C language	Introduction to Numerical Analysis (Gupta, Chandra), Notes

Postgraduate Courses (Industrial Engineering & Operations Research, Indian Institute of Technology, Bombay) (2021-2023)

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
1	IE501: Optimization Models	1	Vishnu Narayanan	10/10	Optimization in industry and social systems: continuous and discrete problems, single/multi-stage models, linear programming, simplex method, duality, sensitivity, combinatorial optimization, branch and bound, mixed-integer programming, binary variables, network flows, assignment, transportation models	Wayne L. Winston (2003) Introduction to Mathematical Programming: Applications and Algorithms, 4th edition, Duxbury Resource Center, H. Paul Williams (1999) Model Building in Mathematical Programming, 4th edition, John Wiley & Son

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
2	IE503: Operations Analysis	1	Narayan Rangaraj	8/10	Manufacturing supply chain: stages, value addition, supply, storage, production, warehousing, transport, structure, decision levels, operations, costs, material flow systems. Quantitative models: forecasting, production planning, scheduling, inventory, MRP, quality control, procurement, distribution, transport, logistics, project management	Steven Nahmias (2004) Production and Operations Analysis, 5th edition, McGraw-Hill.
3	IE507: Modeling & Computation Lab	1	P Balamurugan	10/10	Software tools for modeling and data analysis: AMPL, CPLEX, Spreadsheet Solver, LINDO, LINGO, Neos Solver, MATLAB. Building models, data representation, results, sensitivity analysis. Statistical packages: R, SAS, SPSS, Excel. Descriptive statistics, estimation, tests. Simulation basics, Monte Carlo, reliability, inventory, queueing systems, Markov models	Sheldon M. Ross (2004) Introduction to Probability and Statistics for Engineers and Scientists, 3rd edition, Academic Press, Robert Fourer, David M. Gay and Brian W. Kernighan (2003) AMPL: A Modeling Language for Mathematical Programming, 2nd edition, Duxbury Resource Center
4	IE509: Computer Programming Lab	1	Jayendran Venkateswaran	9/10	Problem-solving with Python: programming basics, conditional statements, loops, data structures, file handling, dynamic data operations, algorithm analysis, user interfaces. Algorithms: searching, sorting, graphs, recursion. Testing, debugging, algorithmic complexity	John V. Guttag (2016) Introduction to Computation and Programming Using Python – with Application to Understanding Data, 2nd edition, The MIT Press, G. L. Heileman (2002) Data Structures Algorithms and Object Oriented Programming, Tata Mcgraw Hill
5	IE605: Engineering Statistics	1	Manjesh Kumar Hanawal	9/10	Modeling randomness and data analysis in engineering: calculus-based probability, distributions, expectation, moment generating functions, sampling statistics, Central Limit Theorem, parameter estimation, maximum likelihood, interval estimates, bias, efficiency, hypothesis testing, regression models, experimental design	Douglas C. Montgomery, Larry Faris Thomas and George C. Runger (2003) Engineering Statistics, 3rd edition, John Wiley & Sons, Dennis Wackerly, William Mendenhall, and Richard L. Scheaffer (2007) Mathematical Statistics with Applications, 7th edition, Duxbury Resource Center

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
6	IE621: Probability and Stochastic Processes I	1	Veeraruna Kavitha	7/10	Models for randomness in industrial and social systems: focus on models, properties, applications. Introduction to probability: conditional probability, independence, discrete and continuous random variables, expectation, moments, stochastic processes. Elementary processes: random walks, Markov chains, Poisson processes. Optional: queuing theory, renewal theory	AICTE Recommended— A First Course in Probability Sheldon Ross, D.P. Bertsekas and John N. Tsitsiklis, Introduction to Probability, 2002
7	IE614: Linear Systems	2	P Balamurugan	7/10	Review of linear algebra: systems of equations, Gaussian elimination, matrix inverse, transpose, vector spaces, linear transformations, independence, basis, rank-nullity, eigenvalues/eigenvectors, characteristic polynomials, Cayley-Hamilton Theorem, diagonalization. Linear dynamical systems: ODEs, linearization, solution methods (first, second, higher order), difference equations, Laplace/z-transforms. Transfer functions, stability, controllability, observability, canonical forms. Applications and case studies of linear systems	Chi-Tsong Chen (1998) Linear System Theory and Design, 3rd edition, Oxford University Press, ack Leonard Goldberg, Matthew Boelkins, and Merle Potter. Differential Equations with Linear Algebra, 1 st Edition (2009), Oxford University Press
8	IE616: Decision Analysis and Game Theory	2	K. S. Mallikarjuna Rao	8/10	Decision making under uncertainty: multi-criteria models, Pareto optimality, goal programming. Decision theory: risk, probability, Bayesian inference, expected utility theorem, utility paradoxes, Newcomb's problem. Dynamic programming: finite state models, backward induction. Game Theory: multi-agent models, Prisoner's Dilemma, zero-sum and non-zero-sum games, Nash Equilibrium, Bayesian Nash equilibrium, evolutionary game theory	Martin J. Osborne (2003) An Introduction to Game Theory, Oxford University Press, James N. Webb (2006) Game Theory: Decisions, Interaction and Evolution, Springer

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
9	IE617: Online Machine Learning and Bandit Algorithms	2	Manjesh Kumar Hanawal	8/10	Introduction to batch learning methods and algorithms. Online learning: adversarial and stochastic settings, expert feedback, bandit feedback, partial monitoring, pure exploration algorithms. Overview of reinforcement learning and its connection to bandits.	T. Lattimore and C. Szepesvari, Bandit Algorithms, Cambridge Press, S. Shalev-Shwartz and S. Ben-David, Understanding Machine Learning: From Theory to Algorithms, Cambridge University Press
10	IE622: Probability and Stochastic Processes II	2	N. Hemachandra	8/10	Markov chains and regenerative processes in stochastic analysis and optimization. Measure theory: probability, expectation, convergence, limit theorems. Discrete-time Markov chains: hitting times, stopping times, recurrence, invariant measures, ergodic theorem. Renewal theory, regenerative processes. Continuous-time processes: Poisson, birth-death, jump chains, martingales, Conditional expectation	E. Cinlar, Introduction to stochastic processes, 1975, Prentice Hall Inc., Englewood Cliffs, J. R. Norris, Markov chains, 1999, Cambridge University Press, Cambridge
11	IE630: Simulation Modeling and Analysis	2	Jayendran Venkateswaran	9/10	Probability and statistics: random variables, correlation, estimation, confidence intervals, hypothesis testing. System Simulation: discrete event and Monte Carlo simulation. Random number generation, random variates, correlated variates, stochastic processes. Input modeling, distribution estimation, goodness of fit. Building simulation models with Python & Vensim or tools like Anylogic, Flexsim. Analysis: simulation output, statistical analysis, system comparison, variance reduction, experimental design, sensitivity analysis, optimization. Optional: agent-based simulation, system dynamics modeling	A. M. Law and W. D. Kelton (2000), Simulation Modeling and Analysis, 3rd Ed., McGraw HillInternational - Industrial Engg. Series

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
12	IE684: IEOR Lab	2	P Balamurugan	10/10	Numerical Optimization: gradient descent, Newton's method, coordinate optimization, Quasi-Newton methods (BFGS), proximal methods. Stochastic Optimization: stochastic gradient descent, variance reduction, Nesterov acceleration. Machine Learning: optimization for classification, regression, clustering. Combinatorial Optimization: Traveling Salesperson Problem, Set Covering, Knapsack, Simulated Annealing. Deep Learning: backpropagation, Adam, AMSGrad for feed-forward and convolutional networks. Sampling & Simulation: Markov Chain Monte Carlo, Thompson sampling, adaptive methods. Bayesian Inference: Expectation Maximization, Bayesian Networks	S. Boyd and L. Vandenberghe (2004), Convex Optimization, Cambridge University Press, B. L. Nelson and J. S. Carson (2009), Discrete Event Simulation, Pearson, Fifth Edition B. L. Nelson and J. S. Carson (2009), Discrete Event Simulation, Pearson, Fifth Edition
13	IES601: Seminar	2	Usha Ananthakumar, Veeraruna Kavitha	9/10	Literature Review, & Presentation along with Industry Project	Anil Kumar K, Suneel Sharma, M. Mahdavi. 2021. Machine Learning (ML) Technolo- gies for Digital Credit Scoring in Rural Finance A Literature Review
14	HS101: Economics	3	K. Narayanan, Aditi Chaubal	8/10	Central Concepts in Economics, Markets and Government in Mixed Economy, Demand and Supply Dynamics, Elasticities and Applications, Consumer Behavior Theory, Production Theory and Business Organizations, Cost Analysis, Perfect Competition, Imperfect Competition and Monopoly, Oligopoly and Monopolistic Competition, Macroeconomics Overview, National Income Accounting, Consumption and Investment Theories, Aggregate Demand and Supply, Multiplier Model, Money and Banking, Monetary Policy, Inflation-Unemployment-Growth Relationship, Open Economy Macroeconomics	Samuelson Paul A, William D. Nordhaus, Economics, 19th Edition, [Indian Adaptation by S. Chaudhuri and A. Sen] Tata McGraw-Hill, 2010. The 18th Edition can also be used for this course

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
15	IE604: Systems Dynamics Modeling & Analysis	3	Jayendran Venkateswaran	9/10	Systems Thinking and Modeling, Dynamic Simulation, Causal Loops and Feedbacks, System Dynamics Building Blocks, Equations and Feedback Loops, Growth Dynamics, Delays, Co-flows, Decision Making, Nonlinear Relationships, Instability, Oscillation, Business and Supply Chain Models, Model Validation, Control Theory: Transfer Functions, Time Domain Analysis, State Space Formulation, Frequency-Domain Techniques, Stability Analysis, Feedback Regulators, Controllability, Observability. Applications: Cross-Functional Management, New Product Development, Fluctuating Workloads, Market Growth, Project Management	John Sterman, Business Dynamics: Systems Thinking and Modeling for a Complex World, Irwin/McGraw-Hill (2000), J. W. Forrester, Industrial Dynamics, Cambridge MA: Productivity Press (1961)
16	IE609: Mathematical Optimisation Techniques	3	Ashutosh Mahajan	8/10	Optimization Problems in Decision Making, Linear Programming: Fundamental Theorem, Degeneracy, Simplex Methods, Cycling, Duality, Complementary Slackness. Non-linear Programming: First and Second Order Conditions, Iterative Methods, Line Search Methods, Hessian-Based Algorithms, Constrained Optimization: Lagrange Multipliers, Karush-Kuhn-Tucker Conditions, Sensitivity Analysis, Quadratic Programming, Convex Problems. Optional: Mixed Integer Models, Interior Point Methods, Iterative Schemes, Sequential Quadratic Programming, Barrier Methods, Trust-Region Methods	M. Bazaara, H. Sherali, and C. Shetty. Nonlinear Programming: Theory and Algorithms (3rd edition), Wiley-Interscience, 2006, J. Nocedal and S. Wright. Numerical Optimization, Springer-Verlag, 1999
17	IE685: MSc.Phd. Research Project I	3	Jayendran Venkateswaran	8/10	NA	NA

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
18	IE714: Quantitative Models for Supply Chain Management	3	Jayendran Venkateswaran, K. S. Mallikarjuna Rao, Omkar D. Palsule-Desai	9/10	Supply Chain Management: Quantitative Techniques, Modeling, Computation, IT Implementation. Topics include material flow management, value management, supply chain cost analysis, robust design, decision coordination, and handling uncertainties. Emphasis on modeling, analysis, and implementation	Simchi-Levi, D. P. Kaminski and E. Simchi-Levi (2003), Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies, (2nd Edition) Irwin, McGraw-Hill
19	CS772: Deep Learning for Natural Language Processing	4	Pushpak Bhattacharyya	8/10	Neural Networks and NLP: History, Basic Mathematics (Linear Algebra, Probability, Information Theory), Linguistic Concepts (Phonology, Morphology, Syntax, Semantics). Neural Computation: Perceptrons, Feedforward Networks, Backpropagation, Recurrent Nets. Classical vs Deep Learning: Representation, Parametric vs Non-parametric Learning. Word Embeddings: Word2Vec, Glove, FastText. Applications: Shallow Parsing, Seq2Seq Transformation, LSTMs, Attention, Transformers, Language Modeling (XLM, BERT, GPT), Machine Translation, Deep Parsing, Deep Semantics, Text Classification, Sentiment Analysis, Multimodal NLP, Explainability.	Ian Goodfellow, Yoshua Bengio and Aaron Courville, Deep Learning, MIT Press, 2016. Dan Jurafsky and James Martin, Speech and Language Processing, 3rd Edition, October 16, 2019. Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smola, Dive into Deep Learning, e-book, 2020.

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
20	IE506: Machine Learning: Principles and Techniques	4	P Balamurugan	7/10	Machine Learning Overview: Motivating Applications. Supervised Learning: Regression (Least Squares, Sparse), Binary/Multi-class Classification (MAP, Misclassification Rate, Bayes Decision, Logistic Regression, Naïve Bayes, k-NN, MLE, Gaussian Models, LDA, QDA, GMM, Perceptron, SVM, Kernel Methods, Neural Networks, Decision Trees, Rule Sets, Ensemble Methods). Bias-Variance Tradeoff, Model Selection, Cross-validation, Computational Learning Theory, Performance Metrics. Additional: Multi-label Classification, Ranking, Ordinal Regression, Structured Classification, Gaussian Processes. Unsupervised Learning: Dimensionality Reduction, Clustering, Density Estimation, Outlier Detection, Change Detection. Other: Semi-supervised Learning, Multi-task Learning, Reinforcement Learning. Implementation: scikit-learn, Applications in Healthcare, Predictive Maintenance, Business Analytics, Decision Sciences	Christopher M. Bishop. Pattern Recognition and Machine Learning, Springer, 2006, Introduction to Machine Learning Alex Smola and S.V.N. Vishwanathan
21	IE612: Introduction to Financial Engineering	4	Narayan Rangaraj	8/10	Portfolio Optimization: Markowitz Model, Two and One Fund Theorems, Mutual Funds. Capital Asset Pricing Model, Security Market Line. Arbitrage, Hedging, Pricing: Contingent Claims, Forward and Futures Contracts. Options: European, American, Asian, Path-Dependent. Models: One and Multi-Period Binomial, Finite State. Martingale Measures, Market Completeness, Asset Pricing Theorems, Black-Scholes Option Pricing	M Capinski and T. Zastawniak (2003), Mathematics for Finance: An Introduction to Financial Engineeting and Springer-Verlar, D. G. Luenberger (1998), Investment Science, Oxford University Press

No.	Course	Sem	Instructor(s)	Grade	Short Description/ Syllabus	Books Used/ Referenced
22	IE716: Integer Programming: Theory and Computations	4	Ashutosh Mahajan	8/10	Integer Programming: Formulations, Optimality, Relaxation, Branch-and-Bound, Strong and Extended Formulations. Polyhedra: Extreme Points, Dimensions, Facets, Projections, Polar, Connections to Integer Programming. Relaxation & Decomposition: Lagrangian Relaxation, Dantzig-Wolfe Decomposition, Column Generation, Benders Decomposition. Cutting Planes: Unstructured Problems (Gomory, Chvátal-Gomory, Rounding, Disjunctive Cuts), Structured Problems (Valid Inequalities, Clique and Cover Inequalities, Applications).	G. L. Nemhauser and L. A. Wolsey, Integer and Combinatorial Optimization, Wiley, 1999. L. A. Wolsey, Integer Programming, Wiley, 1998
23	SC646: Distributed Optimization and Machine Learning	4	Mayank Baranwal	7/10	Distributed Optimization: Design and Analysis, Applications to Machine Learning. Topics: Graph Theory, Iterative Methods for Convex Problems, Synchronous and Asynchronous Setups, Consensus Algorithms, Distributed Machine Learning. Extension of classical control and optimization algorithms to handle communication constraints, network topology, computational resources, and robustness. Recent advances in accelerated distributed optimization using control theory	Lecture Slides