Area A Courses

(At least 6 credit hours of Area A course work must be earned
in courses listed or cross-listed with the Math department.)

Course #	Course name	Notes	Topic Title
CSE 393H	Adv Theory Finite Element Meth	same as E M 394H	
ASE 380P.1	Analytical Methods I	same as E M 386K	
ASE 380P.2	Analytical Methods II		
ORI 390R.1	Applied Probability		
SDS 384.7	Bayesian Statistical Meths		
M 391C	Calculus of Variations	Topics course	Topics in Analysis
M 390C	Coding Theory	Topics course	Topics in Algebra
CSE 397	Comp PDE-Constrnd Bayesian Inv	Topics course	Topics in CSE
CSE 385S	Complex Analysis		
CSE 397	Comput/Var Meths Inverse Probls	Topics course	Topics in CSE
CSE 393	Conservation Laws	Topics course	Topics in Numerical Analysis
E E 381K.18	Convex Optimization	Topics course	
CSE 384U	Design & Analysis of Experiments	same as M 384E, SDS 384.6	
M 382D	Differential Topology		
CSE 386M	Functnl Anly in Theoret Mechs	same as E M 386M	
C S 395T	Graphical Models		
CSE 396	Intro to Appl Harmonic Analys	Topics course	Topics in Applied Mathematics
M 393C	Intro to Compressive Sensing	Topics course	Topics in Applied Mathematics
CSE 394	Intro: Quantif Modlg Uncertnty	Topics course	Topics in Probability & Statistics
CSE 396	Inverse Problems	Topics course	Topics in Applied Mathematics
M 397C	Iterative Numerical Methods	Topics course	Topics in Numerical Analysis
CSE 396	Kinetic Theory	Topics course	Topics in Applied Mathematics
SDS 387	Linear Models		
M 394C	Markov Chains & Mixing Time	Topics course	Topics in Probability & Statistics
SDS 381	Math Methods for Stat Analysis		
CSE 386L	Mathematcl Methods in Sci/Engr	same as E M 386L, ASE 380P.2	
ORI 390R.2	Mathematical Statistics	Topics course	Statistics & Probability
CSE 384R	Mathematical Statistics I		
M 384D	Mathematical Statistics II		
CSE 386C	Methods of Applied Mathematics I	same as M 383C	
CSE 386D	Methods of Applied Mathematics II	same as M 383D	
CSE 385M	Meths of Mathematical Physics I	same as PHY 381M	
SDS 386D	Monte Carlo Methods in Stat		
CSE 396	Multiscale Modeling/Computatn	Topics course	Topics in Applied Mathematics
M 393C	Nonlinear Partial Diff Equatns	Topics course	Topics in Applied Mathematics
CSE 396	Partial Differential Equatns I	Topics course	Topics in Applied Mathematics
CSE 396	Partl Differential Equatns II	Topics course	Topics in Applied Mathematics
E E 381J	Probabil & Stochastic Procs I		
C S 388R	Randomized Algorithms		
CSE 385R	Real Analysis		
CSE 384T	Regression Analysis		
ASE 381P.6	Statistical Estimation Theory		
CSE 394	Stochastic Analysis	Topics course	Topics in Applied Mathematics
CSE 394	Stochastic Processes I	Topics course	Topics in Probability & Statistics
CSE 384K	Theory of Probability I	same as M 385C	
CSE 384L	Theory of Probability II	same as M 385D	
M 393C	Tpcs in Free Boundary Problems	Topics course	Topics in Applied Mathematics

Area B Courses

Course #	Course name	Notes	Topic Title
CSE 393H	Adv Theory Finite Element Meth	same as E M 394H	
SDS 384.7	Bayesian Statistical Meths	Topics course	Topics in Statistics & Probability
NEU 384C	Bootstrap Statistics	Topics course	Topics in Neuroscience
CSE 397	Comp PDE-Constrnd Bayesian Inv	Topics course	Topics in CSE
C S 395T	Comp Stat Appl to Bioinfmatics	same as CSE 383M	
CSE 397	Comput/Var Meths Inverse Probs	Topics course	Topics in CSE
CSE 382G	Computer Graphics	same as C S 384G	
CSE 393	Conservation Laws	Topics course	Topics in Numerical Analysis
E E 381K.18	Convex Optimization	Topics course	Topics in Comm Thry & Signal Processing
E E 381V	Convex Optimization Theory		
E E 380L.10	Data Mining		
C S 391D	Data Mining: Mathematical Persp		
CSE 393F	Finite Element Methods	same as ASE 384P.4, E M 394F	
CSE 392	Geometric Foundations of Data Science	Topics course	Topics in Computer Science
CSE 392	Geometric Modlng & Visualizatn	Topics course	Topics in Computer Science
GEO 384R	Geophysical Time Series Anly		
CSE 397	Grid Generatn & Adaptv Grids	Topics course	Topics in CSE
E M 397.4	Grid Generatn & Adaptv Grids	Topics course	Advanced Studies in Engr Mechanics
CSE 392	High-Perf Computing: Prin/Prac	Topics course	Topics in Computer Science
M 393C	Intro to Appl Harmonic Anly	Topics course	Topics in Applied Mathematics
CSE 394	Intro: Quantif Modlg Uncertnty	Topics course	Topics in Probability & Statistics
CSE 396	Inverse Problems	Topics course	Topics in Applied Mathematics
CSE 393	Iterative Linear Algebra	Topics course	Topics in Numerical Analysis
M 397C	Iterative Numerical Methods	Topics course	Topics in Numerical Analysis
E E 381V	Large Scale Optimization	Topics course	New Topics in Comm, Netwrks & Systems
C S 391L	Machine Learning		
SDS 386D	Monte Carlo Methods in Stats		
CSE 396	Multiscale Methods	Topics course	Topics in Applied Mathematics
M 393C	Multiscale Modeling/Computation	Topics course	Topics in Applied Mathematics
CSE 397	Nonlin Stat/Dyn Fin Elem Anly	Topics course	Topics in CSE
ORI 391Q.1	Nonlinear Programming	Topics course	Optimization
CSE 393N	Num Meth for Flow & Trans Prob		
CSE 383K	Numercl Anly: Algebra & Approx		
CSE 383D	Numerical Anly: Int/App/Quad/Diff Eq		
CSE 383C	Numerical Anly: Linear Algebra		
CSE 383L	Numrcl Anly: Differntl Equatns	same as M 387D	
ORI 397	Optimization Under Uncertainty	Topics course	Current Studies in ORI Engineering
C S 388P	Parallel Algorithms		
CSE 392	Parallel Algors Scientfc Comp	Topics course	Topics in Computer Science
SDS 394C	Parallel Comput for Sci & Engr		
C S 380P	Parallel Systems		
CSE 392	Programming for Performance	Topics course	Topics in Computer Science
C S 388R	Randomized Algorithms		
C S 395T	Scalable Machine Learning	Topics course	Topics in Computer Science
SDS 394	Scientif & Technical Computing		
CSE 397	Stabil/Multiscale Meths in CFD	Topics course	Topics in CSE
CSE 383M	Stat/Discrete Meths Sci Comput		
M E 384Q.7	Stoch Sys Estmtn, and Contr	Topics course	Design of Control Systems
C E 381R	The Finite Element Method		
CSE 393	The Finite Element Method	Topics course	Topics in Numerical Analysis
CSE 380	Tools/Techniqs Computatnl Sci		
CSE 397	Validatn & UQ in Comptl Models	Topics course	

Area C Courses

Course #	Course name	Notes	Topic title
M E 384N.1	Acoustics I	Topics course	Acoustics
M E 384N.2	Acoustics II	Topics course	Acoustics
CH 382K	Adv Phys Chem: Intro Quan Mech		
CH 382L	Adv Phys Chem: Stat Mechanics		
ASE 382Q.7	Adv Probs in Compressbl Flow	Topics course	Fluid Mechanics
PGE 384	Adv Thermodynam & Phase Behav		
M E 382R.5	Advanced Combustion	Topics course	Topics in Combustion
E M 381	Advanced Dynamics		
PGE 381L	Advanced Petrophysics		
CH 382M	Advanced Physical Chemistry		
PGE 388	Advanced Reservoir Engineering		
CHE 387K	Advanced Thermodynamics		
C S 394C	Algorithms for Computatnl Biol		
PGE 383.58	Appl Reservoir Charactrzatn	Topics course	Special Topics in PGE
ORI 390R.5	Applied Stochastic Processes	Topics course	Statistics & Probability
BME 381J.3	Biomed Imaging: Signals/Sys	Topics course	Topics in Cell & Molec Imaging
BME 380J.5	Biostat/Study Dsgn/Rsch Meth	Topics course	Fundamentals of BME
BIO 395H	Cell Biology	same as CH 395H, MOL 395H	
PHY 385K	Classical Mechanics		
CSE 397	Clinical Cardiology	Topics course	Topics in CSE
E E 383V	Comp EMAG	Topics course	New Topics in Electromagnetics
BME 383J.9	Comp Mthds for Biomed Engrs	Topics course	Topics in Comput'l Biomed Engr & Bioinform
CSE 397	Comput/Var Meths Inverse Probs	Topics course	Topics in CSE
E E 383V	Computational Electromagnetics	Topics course	New Topics in Electromagnetics
SDS 385	Computatnl Bio & Bioinfrmtcs	Topics course	Topics in Applied Statistics
E M 384K	Continuum Mechanics		
ASE 396	Convex Optimization and Engr Apps	Topics course	Special Topics
GEO 387F	Dynamics of Atmospheres & Oceans		
M E 381P.3	Dynamics of Turbulent Flow	Topics course	Dynamics of Fluids
E E 383L	Electromagnetic Field Theory		
PHY 387K	Electromagnetic Theory I		
E E 383V	Electromagnetics Metamaterials	Topics course	New Topics in Electromagnetics
C E 380S	Environmental Fluid Mechanics		
FIN 397.4	Financial Risk Management	Topics course	Seminar
M 389W	Fincl Math for Actuarl Applics		
ASE 382Q.1	Foundatns of Fluid Mechanics	Topics course	Fluid Mechanics
E M 388F	Fracture Mechanics		
M E 382R.1	Fundmntls of Combustion Sci	Topics course	Topics in Combustion
M E 381P.1	Fundmtl of Incompressbl Flow	Topics course	Dynamics of Fluids
PGE 387K	Fundmtls Enhanced Oil Recvry I		
BIO 395F	Genetics	same as CH 395F, MOL 395F	
GEO 391	Glaciology	Topics course	Seminar in Geological Sciences
CSE 389D	Intro Math Modelng Sci/Engr II		
CSE 389C	Intro Math Modlng Sci/Engr I		
CH 393L	Intro to Single Mol Chem & Phy	Topics course	Advanced Topics in Physical Chemistry
CSE 394	Intro: Quantif Modlg Uncertnty	Topics course	Topics in Probability & Statistics
E E 380K	Introduction to System Theory		
C E 381W	Introduction to Wave Physics		

Area C Courses

Course #	Course name	Notes	Topic title
GEO 384M	Inverse Theory		
CSE 396	Kinetic Theory	Topics course	Topics in Applied Mathematics
M 393C	Kinetic Theory	Topics course	Topics in Applied Mathematics
ASE 381P.1	Linear Systems Analysis	Topics course	System Theory
C S 391L	Machine Learning		
E E 381V	Machine Lrn: Lrg-Scale Data	Topics course	New Topics in Comm, Netwks, & Sys
R M 391	Mathematics in Finance	Topics course	Topics in Decision Analysis
NEU 394P	Meths in Computatnal Neurosci	Topics course	Seminars in Neurosciences
E M 388M	Micromechanics		
GEO 391	Mod Flow/Trans in Porous Media	Topics course	Seminar in Geological Sciences
CSE 397	Model/Simul Cardiac Function	Topics course	Topics in CSE
ASE 382R.6	Molecular Gas Dynamics	Topics course	Aerodynamics
ASE 382R	Molecular Gas Dynamics II	Topics course	Aerodynamics
GEO 391	Morphodynam/Quant Stratigraphy	Topics course	Seminar in Geological Sciences
GEO 384H	Multidimnsnl Data Anlys in Geo		
C S 388	Natural Language Processing		
CSE 397	Nonlin Fin El/Isogeo Anly Mths		
CSE 397	Nonlin Stat/Dyn Fin Elem Anly	Topics course	Topics in CSE
M E 384N.4	Nonlinear Acoustics	Topics course	Acoustics
ASE 381P.12	Nonlinear Sys/Adapt Control	Topics course	System Theory
PGE 392K	Num Simulation of Reservoirs		
ASE 381P.3	Optimal Control Theory	Topics course	System Theory
C S 395T	Phys Simulation	Topics course	Topics in Computer Science
GEO 387H	Physical Climatology		
PHY 380L	Plasma Physics I		
CSE 397	Predctv Computatl Sci Fndtns	Topics course	Topics in CSE
PHY 396K	Quantum Field Theory I		
PHY 389K	Quantum Mechanics I		
GEO 391	Reactive Flow in Porous Media	Topics course	Seminar in Geological Sciences
PHY 387M	Relativity Theory I		
PGE 383	Reservoir Geomechanics	Topics course	Special Topics in PGE
C S 395T	Scalable Machine Learning	Topics course	Topics in Computer Science
GEO 380F	Seismology II		
GEO 390D	Seismology III		
E E 396V	Semiconductor Nanostructures	Topics course	New Topics in Solid-State Electronics
E E 396K.2	Semiconductor Physics	Topics course	Solid-State Device Theory
ASE 384P.1	Solid Mechanics I	Topics course	Structural & Solid Mechanics
E M 388L	Solid Mechanics II	same as ASE 384P.2	
PHY 392T	Solid-St Phy: Biophysics	Topics course	Special Topics in Solid-State Phys
CSE 397	Stabil/Multiscale Meths in CFD	Topics course	Topics in CSE
PHY 385L	Statistical Mechanics		
E M 384L	Structural Dynamics	same as ASE 384P.3	
GEO 390M	Thermodynamics of Geol Process		
CSE 397	Tissue/Scaffold Biomechanics	Topics course	Topics in CSE
PGE 381M	Transport Phenomena		
GEO 391	Uncertainty Quantification	Topics course	Seminar in Geological Sciences
M E 384N.5	Underwater Acoustics	Topics course	Acoustics
NEU 380E	Vision Systems		