CSE Graduate Course Structure - PhD List

PhD students must pass a total of nine letter-graded courses from a list of courses that is maintained by CSE Gradcom. Four of these courses must be taken from four different areas. Students' advisors must approve their students' course selection.
Students must also pass the 1-credit seminar CSE 292.

Artificial Intelligence

CSE 250A AI: Probabilistic Reason&Learning CSE 251A ML: Learning Algorithms
CSE 251B ML: Neural Networks for Pattern Recognition
CSE 251C ML: Machine Learning Theory
CSE 251U Unsupervised Learning
CSE 253/R Machine Learning for Music
CSE 254 Statistical Learning
CSE 255 Data Mining&Analytics
CSE 256 Statistical Natural Language Processing
CSE 257 Search&Optimization
CSE 258/R Recommender Sys&Web Mining
CSE 261 Advanced Data-Driven Text Mining
CSE 291A Topics in Artificial Intelligence

Bioinformatics

CSE 280A Algorithms&Computational Biology
CSE 282/BENG202 Bioinf II: Seq&Struct Analys
CSE 283/BENG203 Bioinf III: Functional Genomics
CSE 284 Personal Genomics for Bioinfo
MATH 283 Statistical Methods in Bioinfo
CSE 291B Topics in Bioinformatics

Computer Engineering

CSE 237A Intro to Embedded Computing
CSE 237B Software for Embedded Systems
CSE 237C Validation&Testing of Embedded Systems
CSE 237D Design Automation&Prototyping for Embedded Systems
CSE 240A Princ/Computer Architecture
CSE 240B Advanced Computer Architecture
CSE 240C Advanced Microarchitecture
CSE 240D Application-Specific Architectures
CSE 241A/ECE260B VLSI Integrated Circuits &Systems Design
CSE 243A Intro Synthesis Methodologies in VLSI CAD
CSE 244A VLSI Test
CSE 245 Computer Aided Circuit Simulation&Verification
CSE 248 Algrthmc&Optmztn Fdns VLSI CAD
ECE 260A VLSI Digital System Algorithms& Architectures
ECE 260C VLSI Advanced Topics
ECE 284 Special Topics in Computer Eng
CSE 291C Topics in Computer Engineering

Computer Systems and Security

CSE 207B Applied Cryptography
CSE 221 Operating Systems
CSE 222A Computer Communication Networks
CSE 222B Internet Algorithmics
CSE 222C Wireless Networks
CSE 223B Distributed Computing&Systems
CSE 224 Graduate Networked Systems
CSE 227 Computer Security
CSE 260 Parallel Computation
CSE 262 System Support for Applications of Parallel Computation
CSE 266 Virtualization and Cloud Computing
CSE 291Y Topics in Computer Systems and Security

Database Systems

CSE 232 Principles/Database Systems
CSE 232B Database System Implementation
CSE 233 Database Theory
CSE 234 Data Systems for ML
CSE 291D Topics in Database Systems

Graphics & Vision

CSE 163 Adv Computer Graphics
CSE 168 Computer Graphics II
CSE 252A Computer Vision I
CSE 252B Computer Vision II
CSE 252C Modern Computer Vision
CSE 252D Adv Computer Vision
CSE 270 Discrete Differential Geometry
CSE 272 Adv Image Synthesis
CSE 273 Computational Photography
CSE 274 Selected Topics in Graphics
CSE 275 Deep Learning for 3D Data
CSE 291G Topics in Graphics and Vision

Human-computer Interaction

CSE 216/COGS230 Human-Computer Interaction
CSE 217 Human-Centered Computing for Health
COGS 220 Information Visualization
COGS 223 Collective Intelligence
COGS 231 Design Seminar on Human-Centered Programming
CSE 291I Topics in Human-Computer Interaction

Programming Languages, Compilers, & Software Engineering

CSE 210 Principle/Software Engineering
CSE 218 Adv Topic/Software Engineering
CSE 230 Principles/Program Languages
CSE 231 Advanced Compiler Design
CSE 291P Topics in Programming Languages, Compilers, and Software Engineering

Robotics

CSE 276A Introduction to Robotics
CSE 276B Human Robot Interaction
CSE 276C Mathematics for Robotics
CSE 276D Healthcare Robotics
CSE 276E Robot Systems Design& Implementation
CSE 276F Machine Learning for Robotics
CSE 291O Topics in Robotics

Theoretical Computer Science

CSE 200 Computability&Complexity
CSE 201A Advanced Complexity
CSE 202 Algorithm Design&Analysis
CSE 203A Advanced Algorithms
CSE 203B Convex Optimization
CSE 205A Logic in Computer Science
CSE 206A Lattice Algorithms&Applications
CSE 207 Modern Cryptography
CSE 207A Modern Cryptography
CSE 208 Advanced Cryptography
CSE 291T Topics in Theoretical Computer Science

***Update regarding lettered CSE 291 courses [291A, 291B, 291C, 291D, 291G, 291I, 291O, 291P, 291T, and 291Y]**

(Effective Fall 2025): Lettered CSE 291 courses may count toward Breadth or Elective requirements under the corresponding research area listed above. These lettered CSE 291 courses cannot be petitioned to count in a different research area other than the area listed above, as these have already been vetted appropriately by the faculty teaching the course. Any unlettered 291 course taken prior to Fall 2025, may only count as an Elective course requirement. Students can take multiple lettered 291 courses in the same research area, as long as they have different subtitles. Students cannot retake or get duplicate credit for lettered 291s and unlettered 291s with the same course subtitle. All 291 courses MUST be taken for four units AND a Letter grade in order to count towards coursework requirements.