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 Reasoning & Learning
- CSE 250B AI: Learning Algorithms
- CSE 250C Machine Learning Theory
- CSE 251A ML: Learning Algorithms
- CSE 251B ML: Neural Networks for Pattern Recognition
- CSE 251C ML: Machine Learning Theory
- CSE 253 Neural Networks
- CSE 254 Statistical Learning
- CSE 255 Data Mining & Analytics
- CSE 256 Statistical Natural Language Processing
- CSE 257 Search & Optimization
- CSE 258 Recommender Sys & Web Mining

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

**Computer Engineering**
- CSE 240A Princ/Computer Architecture
- CSE 240B Advanced Computer Architecture
- CSE 240C Advanced Microarchitecture
- CSE 240D Application-Specific Architectures
- 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 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 Algorithms & Optimization for VLSI CAD
- ECE 260A VLSI Digital System Algorithms & Architectures
- ECE 280C VLSI Advanced Topics
- ECE 284 Special Topics in Computer Eng

**Computer Systems and Security**
- CSE 207B Applied Cryptography
- CSE 221 Operating Systems
- CSE 222A Computer Communication Networks
- CSE 222B Internet Algorithmics
- 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

**Database Systems**
- CSE 232 Principles/Database Systems
- CSE 232B Database System Implementation
- CSE 233 Database Theory
- CSE 234 Data Systems for ML

**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 272 Adv Image Synthesis
- CSE 274 Selected Topics in Graphics

**Human-computer Interaction**
- CSE 216/COGS230 Human-Computer Interaction
- COGS 220 Information Visualization
- COGS 231 Design Seminar on Human-Centered Programming

**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

**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

**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

**Topics**
- CSE 291* Topics in Computer Science and Engineering

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*Regarding CSE 291s:* Requests to apply CSE 291s towards the coursework requirements are subject to advisor approval. CSE 291s MUST be taken for four units of letter grade in order to count towards coursework requirements.