

# 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 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 Algrthmc&Optmztn Fdns VLSI CAD  
ECE 260A VLSI Digital System Algorithms& Architectures  
ECE 260C 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

**\*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.