Communication, Computation, and Statistics

The Designated Emphasis (DE) in Communication, Computation and Statistics provides an academic structure for an interdisciplinary exchange of ideas. Many of the most significant developments in modern information technology—including communication and data networks, multimedia information processing, and large-scale, distributed data analysis in science, engineering and commerce—are no longer the province of a single academic field, but draw on ideas from diverse sources in computer science, electrical engineering and statistics. The DE in Communication, Computation and Statistics enables specialized, multi-disciplinary training and research opportunities in various emerging areas of information technology. Admitted students not only participate in a cutting-edge program and receive explicit recognition of specialization in the Designated Emphasis but are also well positioned to compete for the most desirable jobs in information technology, both in academia and in industry.

To be admitted to the Designated Emphasis in Communication, Computation and Statistics, an applicant must already be accepted into a PhD program at the University of California, Berkeley. The candidate must also submit a petition for admission prior to taking the Qualifying Examination, after one year of study in his or her home department, and preferably in the second year of his or her graduate training. The petition for admission must be accompanied by a letter of recommendation from a sponsoring faculty member (e.g., the student's adviser), a personal statement, a Curriculum Vitae, and copies of transcripts. The petition for admission must be signed by the sponsoring faculty member before submission to the graduate student services adviser.

For further information regarding admission to graduate programs at UC Berkeley, please see the Graduate Division's Admissions website (http://grad.berkeley.edu/admissions) .

Curriculum

A student in EECS must choose two breadth courses from the following list, and a student in a department other than EECS or Statistics must choose one breadth courses from the following list:

STAT 204	Probability for Applications	4
STAT C205A	Probability Theory	4
STAT C205B	Probability Theory	4
STAT C206A	Advanced Topics in Probability and Stochastic Process	3
STAT C206B	Advanced Topics in Probability and Stochastic Processes	3
STAT 210A	Theoretical Statistics	4
STAT 210B	Theoretical Statistics	4
STAT 215A	Statistical Models: Theory and Application	4
STAT 215B	Statistical Models: Theory and Application	4
STAT 230A	Linear Models	4
STAT 232	Experimental Design	4
STAT 240	Nonparametric and Robust Methods	4
STAT C241A	Statistical Learning Theory	3
STAT C241B	Advanced Topics in Learning and Decision Making	3
STAT 248	Analysis of Time Series	4
STAT 260	Topics in Probability and Statistics	3

A student in Statistics must choose two breadth courses from the following list, and a student in a department other than EECS or Statistics must choose one breadth courses from the following list:

EL ENG 221A	Linear System Theory	4
EL ENG 222	Nonlinear Systems--Analysis, Stability and Control	3
EL ENG 223	Stochastic Systems: Estimation and Control	3
EL ENG 224A	Digital Communications	4
EL ENG 225A	Digital Signal Processing	3
EL ENG 225B	Digital Image Processing	3
EL ENG 225D	Audio Signal Processing in Humans and Machines	3
EL ENG 226A	Random Processes in Systems	4
EL ENG 227AT	Optimization Models in Engineering	4
EL ENG 227BT	Convex Optimization	4
EL ENG 228A	High Speed Communications Networks	3
EL ENG 229A	Information Theory and Coding	3
EL ENG 229B	Error Control Coding	3
EL ENG C291	Control and Optimization of Distributed Parameters Systems	3
EL ENG C291E	Hybrid Systems and Intelligent Control	3
COMPSCI 270	Combinatorial Algorithms and Data Structures	3
COMPSCI 271	Randomness and Computation	3
COMPSCI C280	Computer Vision	3
COMPSCI C281A	Statistical Learning Theory	3
COMPSCI C281B	Advanced Topics in Learning and Decision Making	3
COMPSCI 288	Natural Language Processing	4
COMPSCI 289A	Introduction to Machine Learning	4

The Designated Emphasis will be satisfied in the qualifying examination by the designation of communication, computation and statistics as substantive areas of interrogation. The qualifying examination committee must include a member of the Designated Emphasis Group who may represent either the home department of the student or another discipline. The qualifying examination committee must include an Academic Senate member from outside the student's home department. Satisfactory performance on the qualifying examination for the doctorate will be judged independently from performance in the Designated Emphasis.

One member of the Designated Emphasis Group must serve on the dissertation committee and insure that the thesis contributes to the interdisciplinary study of communication, computation and statistics in a significant way. The dissertation committee must include an Academic Senate member from outside the student's home department.