| id           | topic   | id           | topic   |
|--------------|---|--------------|---|
| .0001        | Introduction to Computer Science Programming in Python  | 6.551        | Acoustics of Speech and Hearing                                       |
| 0002         | Introduction to Computational Thinking and Data Science   | 6.552        | Signal Processing by the Auditory System: Perception                  |
| .002         | Circuits and Electronics  | 6.555        | Biomedical Signal and Image Processing                                |
| 003          | Signals and Systems   | 6.556        | Data Acquisition and Image Reconstruction in MRI                      |
| .004         | Computation Structures  | 6.561        | Fields, Forces, and Flows in Biological Systems                       |
| .005         | Elements of Software Construction   | 6.580        | Principles of Synthetic Biology                                       |
| .006         | Introduction to Algorithms  | 6.581        | Foundations of Algorithms and Computational Techniques in Systems Bio |
| .007         | Electromagnetic Energy: From Motors to Solar Cells  | 6.589        | Principles of Synthetic Biology                                       |
| .008         | Introduction to Inference   | 6.602        | Fundamentals of Photonics   |
| .01          | Introduction to EECS I  | 6.608        | Introduction to Particle Accelerators                                 |
| .011         | Signals, Systems, and Inference   | 6.621        | Fundamentals of Photonics   |
| .012         | Microelectronic Devices and Circuits  | 6.630        | Electromagnetics  |
| .012         | I .   | 6.631        | Optics and Photonics  |
|              | Electromagnetics and Applications   |              |   |
| 02           | Introduction to EECS II   | 6.632        | Electromagnetic Wave Theory   |
| 021          | Cellular Biophysics and Neurophysiology   | 6.634        | Nonlinear Optics  |
| 022          | Quantitative Systems Physiology   | 6.637        | Optical Signals, Devices, and Systems                                 |
| 023          | Fields, Forces and Flows in Biological Systems  | 6.641        | Electromagnetic Fields, Forces, and Motion                            |
| 024          | Molecular, Cellular, and Tissue Biomechanics  | 6.642        | Continuum Electromechanics  |
| 025          | Medical Device Design   | 6.644, 6.645 | Advanced Topics in Applied Physics                                    |
| 03           | Introduction to EECS II from a Medical Technology Perspective   | 6.651        | Introduction to Plasma Physics I                                      |
| 033          | Computer System Engineering   | 6.652        | Introduction to Plasma Physics II                                     |
| .034         | Artificial Intelligence   | 6.673        | Introduction to Numerical Simulation in Electrical Engineering        |
| .035         | Computer Language Engineering   | 6.685        | Electric Machines   |
| .036         | Introduction to Machine Learning  | 6.690        | Introduction to Electric Power Systems                                |
| 037          | Structure and Interpretation of Computer Programs   | 6.695        | Engineering, Economics and Regulation of the Electric Power Sector    |
| S04          | Special Subject: Fundamentals of Programming  | 6.701        | Introduction to Nanoelectronics                                       |
| 041          | Probabilistic Systems Analysis  | 6.717        | Design and Fabrication of Microelectromechanical Systems              |
| 042          | Mathematics for Computer Science  | 6.719        | Nanoelectronics   |
| .045         | Automata, Computability, and Complexity   | 6.720        | Integrated Microelectronic Devices                                    |
| .046         | Design and Analysis of Algorithms   | 6.728        | Applied Quantum and Statistical Physics                               |
| .047         | Computational Biology: Genomes, Networks, Evolution   | 6.730        | Physics for Solid-State Applications                                  |
| .047         | Evolutionary Biology: Genomes, Networks, Evolution   Evolutionary Biology: Concepts, Models and Computation | 6.731        | Semiconductor Optoelectronics: Theory and Design                      |
|              |   |              | ·   |
| .050         | Information, Entropy, and Computation   | 6.732        | Physics of Solids   |
| .057         | Introduction to MATLAB  | 6.735, 6.736 |   |
| .058         | Preview of Signals and Systems  | 6.774        | Physics of Microfabrication: Front End Processing                     |
| .061         | Introduction to Electric Power Systems  | 6.775        | CMOS Analog and Mixed-Signal Circuit Design                           |
| .07          | Projects in Microscale Engineering for the Life Sciences  | 6.776        | High Speed Communication Circuits                                     |
| 070          | Electronics Project Laboratory  | 6.777        | Design and Fabrication of Microelectromechanical Systems              |
| 071          | Electronics, Signals, and Measurement   | 6.780        | Control of Manufacturing Processes                                    |
| 072          | Introduction to Digital Electronics   | 6.781        | Nanostructure Fabrication   |
| 073          | Creating Video Games  | 6.789        | Organic Optoelectronics   |
| .S062-6.S064 | Special Subject in Electrical Engineering and Computer Science  | 6.801        | Machine Vision  |
| .S076-6.S084 | Special Subject in Electrical Engineering and Computer Science  | 6.802        | Foundations of Computational and Systems Biology                      |
| S085-6.S099  | Special Subject in Electrical Engineering and Computer Science  | 6.803        | The Human Intelligence Enterprise                                     |
| 100          | Electrical Engineering and Computer Science Project   | 6.804        | Computational Cognitive Science                                       |
| 101          | Introductory Analog Electronics Laboratory  | 6.805        | Foundations of Information Policy                                     |
| 111          | Introductory Digital Systems Laboratory   | 6.806        | Advanced Natural Language Processing                                  |
| 115          | Microcomputer Project Laboratory  | 6.811        | Principles and Practice of Assistive Technology                       |
| 117          | Introduction to Electrical Engineering Lab Skills   | 6.813        | User Interface Design and Implementation                              |
| 123          | Bioinstrumentation Project Lab  | 6.814        | Database Systems  |
| 129          | Biological Circuit Engineering Laboratory   | 6.815        | Digital and Computational Photography                                 |
| 131          | Power Electronics Laboratory  | 6.816        | Digital and Computational Photography<br>  Multicore Programming      |
|              | Robotics: Science and Systems I   | •            | Multicore Programming<br>  Advances in Computer Vision                |
| 141          |   | 6.819        |   |
| 142          | Robotics: Science and Systems II  | 6.820        | Foundations of Program Analysis                                       |
| 146          | Mobile Autonomous Systems Laboratory: MASLAB  | 6.823        | Computer System Architecture  |
| 147          | The BattleCode Programming Competition  | 6.824        | Distributed Computer Systems Engineering                              |
| 148          | Web Programming Competition   | 6.828        | Operating System Engineering  |
| 149          | Introduction to Programming Using Python  | 6.829        | Computer Networks   |
| 150          | Mobile Applications Competition   | 6.830        | Database Systems  |
| 151          | iOS Game Design and Development Competition   | 6.831        | User Interface Design and Implementation                              |
| .152         | Micro/Nano Processing Technology  | 6.832        | Underactuated Robotics  |

| l c 1 c 1     | Madaur Online Businel Tahamalaur                                      | l c . 0.2.2  | l mb - mara - Tal-11/ ann a - Pal-annia                                 |
|---------------|---|--------------|---|
| 6.161         | Modern Optics Project Laboratory                                      | 6.833        | The Human Intelligence Enterprise                                       |
| 6.163         | Strobe Project Laboratory   | 6.834        | Cognitive Robotics  |
| 6.169         | Theory and Application of Circuits and Electronics                    | 6.835        | Intelligent Multimodal User Interfaces                                  |
| 6.170         | Software Studio   | 6.836        | Multicore Programming   |
| 6.172         | Performance Engineering of Software Systems                           | 6.837        | Computer Graphics   |
| 6.175         | Constructive Computer Architecture                                    | 6.838        | Advanced Topics in Computer Graphics                                    |
| 6.176         | Pokerbots Competition   | 6.839        | Advanced Computer Graphics  |
| 6.177         | Building Programming Experience in Python                             | 6.840        | Theory of Computation   |
| 6.178         | Introduction to Software Engineering in Java                          | 6.841        | Advanced Complexity Theory  |
| 6.179         | Introduction to C and C++   | 6.842        | Randomness and Computation  |
| 6.182         | Psychoacoustics Project Laboratory                                    | 6.845        | Quantum Complexity Theory   |
| 6.S183-6.S192 | Special Laboratory Subject in Electrical Engineering and Computer Sci |              | Parallel Computing  |
| 6.S193-6.S198 | Special Laboratory Subject in Electrical Engineering and Computer Sci | :            | Geometric Folding Algorithms: Linkages, Origami, Polyhedra              |
| 6.UAP         | Undergraduate Advanced Project  | 6.850        | Geometric Computing   |
| 6.UAR         | Seminar in Undergraduate Advanced Research                            | 6.851        | Advanced Data Structures  |
| 6.UAT         | Oral Communication  | 6.852        | Distributed Algorithms  |
| 6.URS         | Undergraduate Research in Electrical Engineering and Computer Science | 6.853        | Topics in Algorithmic Game Theory                                       |
| 6.207         | Networks  | 6.854        | Advanced Algorithms   |
| 6.231         | Dynamic Programming and Stochastic Control                            | 6.856        | Randomized Algorithms   |
| 6.241         | Dynamic Systems and Control   | 6.857        | Network and Computer Security   |
| 6.242         | Advanced Linear Control Systems                                       | 6.858        | Computer Systems Security   |
| 6.243         | Dynamics of Nonlinear Systems   | 6.859        | Integer Programming and Combinatorial Optimization                      |
| 6.245         | Multivariable Control Systems   | 6.863        | Natural Language and the Computer Representation of Knowledge           |
| 6.246, 6.247  | Advanced Topics in Control  | 6.864        | Advanced Natural Language Processing                                    |
| 6.248, 6.249  | Advanced Topics in Numerical Methods                                  | 6.865        | Advanced Computational Photography                                      |
| 6.251         | Introduction to Mathematical Programming                              | 6.866        | Machine Vision  |
| 6.252         | Nonlinear Optimization  | 6.867        | Machine Learning  |
| 6.253         | Convex Analysis and Optimization                                      | 6.868        | The Society of Mind   |
| 6.254         | Game Theory with Engineering Applications                             | 6.869        | Advances in Computer Vision   |
| 6.255         | Optimization Methods  | 6.870        | Advanced Topics in Computer Vision                                      |
| 6.256         | Algebraic Techniques and Semidefinite Optimization                    | 6.871        | Performance Engineering of Software Systems                             |
| 6.260, 6.261  | Advanced Topics in Communications                                     | 6.872        | Biomedical Computing  |
| 6.262         | Discrete Stochastic Processes   | 6.874        | Computational Systems Biology   |
| 6.263         | Data-Communication Networks   | 6.875        | Cryptography and Cryptanalysis  |
| 6.265         | Advanced Stochastic Processes   | 6.876        | Advanced Topics in Cryptography   |
| 6.267         | Heterogeneous Networks: Architecture, Transport, Proctocols, and Mana | 6.878        | Advanced Computational Biology: Genomes, Networks, Evolution            |
| 6.268         | Network Science and Models  | 6.881, 6.882 | Advanced Topics in Artificial Intelligence                              |
| 6.281         | Logistical and Transportation Planning Methods                        | 6.883        | Advanced Topics in Artificial Intelligence                              |
| 6.291         | Seminar in Systems, Communications, and Control Research              | 6.884        | Advanced Topics in Artificial Intelligence                              |
| 6.301         | Solid-State Circuits  | 6.885-6.888  | Advanced Topics in Computer Systems                                     |
| 6.302         | Feedback Systems  | 6.889-6.893  | Advanced Topics in Theoretical Computer Science                         |
| 6.332, 6.333  | Advanced Topics in Circuits   | 6.894-6.896  | Advanced Topics in Graphics and Human-Computer Interfaces               |
| 6.334         | Power Electronics   | 6.902        | Engineering Innovation and Design                                       |
| 6.335         | Fast Methods for Partial Differential and Integral Equations          | 6.903        | Patents, Copyrights, and the Law of Intellectual Property               |
| 6.336         | Introduction to Numerical Simulation                                  | 6.904        | Ethics for Engineers  |
| 6.337         | Introduction to Numerical Methods                                     | 6.905        | Large-scale Symbolic Systems  |
| 6.338         | Parallel Computing  | 6.910        | Independent Study in Electrical Engineering and Computer Science        |
| 6.339         | Numerical Methods for Partial Differential Equations                  | 6.920        | Practical Work Experience   |
| 6.341         | Discrete-Time Signal Processing                                       | 6.921        | 6-A Internship  |
| 6.344         | Digital Image Processing  | 6.922        | Advanced 6-A Internship   |
| 6.345         | Automatic Speech Recognition  | 6.930        | Management in Engineering   |
| 6.347, 6.348  | Advanced Topics in Signals and Systems                                | 6.932        | Linked Data Ventures  |
| 6.374         | Analysis and Design of Digital Integrated Circuits                    | 6.933        | Entrepreneurship in Engineering: The Founder's Journey                  |
| 6.375         | Complex Digital Systems Design  | 6.935        | Financial Market Dynamics and Human Behavior                            |
| 6.376         | Bioelectronics  | 6.941        | Statistics for Research Projects: Statistical Modeling and Experiment   |
| 6.431         | Applied Probability   | 6.945        | Large-scale Symbolic Systems  |
| 6.434         | Statistics for Engineers and Scientists                               | 6.946        | Classical Mechanics: A Computational Approach                           |
| 6.435         | System Identification   | 6.951        | Graduate 6-A Internship   |
| 6.436         | Fundamentals of Probability   | 6.952        | Graduate 6-A Internship   |
| 6.437         | Inference and Information   | 6.960        | Introductory Research in Electrical Engineering and Computer Science    |
| 6.438         | Algorithms for Inference  | 6.961        | Introduction to Research in Electrical Engineering and Computer Science |
| 6.440         | Essential Coding Theory   | 6.962        | Independent Study in Electrical Engineering and Computer Science        |
| 6.441         | Information Theory  | 6.980        | Teaching Electrical Engineering and Computer Science                    |
| 6.442         | Optical Networks  | 6.981        | Teaching Electrical Engineering and Computer Science                    |
| 6.443         | Quantum Information Science   | 6.982        | Teaching College-Level Science and Engineering                          |
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| 6.450        | Principles of Digital Communication                                   | 6.991         | Research in Electrical Engineering and Computer Science               |
|--------------|---|---------------|---|
| 6.452        | Principles of Wireless Communication                                  | 6.999         | Practical Experience in EECS  |
| 6.453        | Quantum Optical Communication   | 6.EPE         | UPOP Engineering Practice Experience                                  |
| 6.454        | Graduate Seminar in Area I  | 6.EPW         | UPOP Engineering Practice Workshop                                    |
| 6.456        | Array Processing  | 6.S897-6.S899 | Special Subject in Computer Science                                   |
| 6.503        | Foundations of Algorithms and Computational Techniques in Systems Bio | 6.S911-6.S919 | Special Subject in Electrical Engineering and Computer Science        |
| 6.521        | Cellular Biophysics   | 6.S963-6.S967 | Special Studies: EECS   |
| 6.522        | Quantitative Physiology: Organ Transport Systems                      | 6.S974        | Special Subject in Electrical Engineering and Computer Science        |
| 6.524        | Molecular, Cellular, and Tissue Biomechanics                          | 6.S975-6.S979 | Special Subject in Electrical Engineering and Computer Science        |
| 6.525        | Medical Device Design   | 6.THG         | Graduate Thesis   |
| 6.541        | Speech Communication  | 6.THM         | Master of Engineering Program Thesis                                  |
| 6.542        | Laboratory on the Physiology, Acoustics, and Perception of Speech     | 6.UR          | Undergraduate Research in Electrical Engineering and Computer Science |
| 6.544, 6.545 | Advanced Topics in BioEECS  |               |   |

Total 277 records, File: db/eecs/electrical-engineering-and-computer-science-mit2015

| id<br> | topic   | id<br>-+ | topic<br>+  |
|--------|---|----------|---|
| S101   | Introduction to Computing Principles  | CS244B   | Distributed Systems   |
| S103   | Mathematical Foundations of Computing                                       | CS245    | Database Systems Principles   |
| S105   | Introduction to Computers   | CS246    | Mining Massive Data Sets  |
| S106A  | Programming Methodology (ENGR 70A)  | CS247    | Human-Computer Interaction Design Studio                                      |
| S106B  | Programming Abstractions (ENGR 70B)   | CS248    | Interactive Computer Graphics   |
| S106X  | Programming Abstractions (Accelerated) (ENGR 70X)                           | CS249A   | Object-Oriented Programming from a Modeling and Simulation Perspective        |
| S107   | Computer Organization and Systems   | CS251    | Bitcoin and Crypto Currencies   |
| S107E  | Computer Systems from the Ground Up   | CS251P   | Bitcoin & Crypto Currencies Lab   |
| S108   | Object-Oriented Systems Design  | CS255    | Introduction to Cryptography  |
| S109   | Introduction to Probability for Computer Scientists                         | CS261    | Optimization and Algorithmic Paradigms  |
| S10SC  | Great Ideas in Computer Science   | CS262    | Computational Genomics (BIOMEDIN 262)   |
| S110   | Principles of Computer Systems  | CS265    | Randomized Algorithms and Probabilistic Analysis (CME 309)                    |
| S123   | Programming Your Personal Robot   | CS267    | Graph Algorithms  |
| S124   | From Languages to Information (LINGUIST 180, LINGUIST 280)                  | CS270    | Modeling Biomedical Systems: Ontology, Terminology, Problem Solving (BIOMEDI  |
| S12SC  | Computational Decision Making   | CS272    | Introduction to Biomedical Informatics Research Methodology (BIOE 212, BIOME  |
| S131   | Computer Vision: Foundations and Applications                               | CS273A   | A Computational Tour of the Human Genome (BIOMEDIN 273A, DBIO 273A)           |
| S140   | Operating Systems and Systems Programming                                   | CS274    | Representations and Algorithms for Computational Molecular Biology (BIOE 214  |
| S142   | Web Applications  | CS275    | Translational Bioinformatics (BIOMEDIN 217)                                   |
| S143   | Compilers   | CS275A   | Symbolic Musical Information (MUSIC 253)                                      |
| S144   | Introduction to Computer Networking   | CS275B   | Music Query, Analysis, and Style Simulation (MUSIC 254)                       |
| S145   | Introduction to Databases   | CS276    | Information Retrieval and Web Search (LINGUIST 286)                           |
| S147   | Introduction to Human-Computer Interaction Design                           | CS279    | Computational Biology: Structure and Organization of Biomolecules and Cells   |
| S148   | Introduction to Computer Graphics and Imaging                               | CS294S   | Research Project in Software Systems and Security                             |
| S149   | Parallel Computing  | CS294W   | Writing Intensive Research Project in Computer Science                        |
| S154   | Introduction to Automata and Complexity Theory                              | CS29N    | Computational Decision Making   |
| S155   | Computer and Network Security   | CS2C     | Introduction to Media Production  |
| S157   | Logic and Automated Reasoning   | CS300    | Departmental Lecture Series   |
| S161   | Design and Analysis of Algorithms   | CS309A   | Cloud Computing   |
| S166   | Data Structures   | CS315B   | Parallel Computing Research Project   |
| S167   | Readings in Algorithms  | CS316    | Advanced Multi-Core Systems   |
| S168   | The Modern Algorithmic Toolbox  | CS325    | Topics in Computational Sustainability  |
| S170   | Stanford Laptop Orchestra: Composition, Coding, and Performance (MUSIC 128) | CS327A   | Advanced Robotic Manipulation   |
| S181   | Computers, Ethics, and Public Policy  | CS334A   | Convex Optimization I (CME 364A, EE 364A)                                     |
| S181W  | Computers, Ethics, and Public Policy (WIM)                                  | CS341    | Project in Mining Massive Data Sets   |
| S183C  | Technology-enabled Blitzscaling   | CS344G   | Network Application Studio  |
| S190   | Software Design Studio  | CS345D   | Advanced Topics in Database Systems   |
| S191   | Senior Project  | CS347    | Parallel and Distributed Data Management                                      |
| S191W  | Writing Intensive Senior Project (WIM)                                      | CS348A   | Computer Graphics: Geometric Modeling   |
| S192   | Programming Service Project   | CS348B   | Computer Graphics: Image Synthesis Techniques                                 |
| S193C  | !   | CS354    | Topics in Circuit Complexity  |
| S193P  | !   | CS357    | Advanced Topics in Formal Methods   |
| S194   | Software Project  | CS367    | Algebraic Graph Algorithms  |
| S194H  |   | CS369L   | Theoretical Perspective on Machine Learning                                   |
| S194W  | !   | CS371    | Computational Biology in Four Dimensions (BIOMEDIN 371, BIOPHYS 371, CME 371) |
| S196   | Computer Consulting   | CS373    | Statistical and Machine Learning Methods for Genomics (BIO 268, BIOMEDIN 245  |
| S198   | Teaching Computer Science   | CS374    | Algorithms in Biology (BIOMEDIN 374)  |
| S199   | Independent Work  | CS377D   | Topics in Learning and Technology: d.compress - Designing Calm (EDUC 328A)    |
| S199P  | Independent Work  | CS377E   | Designing Solutions to Global Grand Challenges                                |
| S1C    | Introduction to Computing at Stanford                                       | CS390A   | Curricular Practical Training   |
| S1U    | Practical Unix  | CS390B   | Curricular Practical Training   |
| 5202   | Law for Computer Science Professionals                                      | CS390C   | Curricular Practical Training   |
| 5204   | Legal Informatics   | CS390P   | Part-time Curricular Practical Training                                       |
| S205A  | Mathematical Methods for Robotics, Vision, and Graphics                     | CS390Q   | Part-Time Curricular Practical Training                                       |
| S210A  | !   | CS390R   | Part-Time Curricular Practical Training                                       |
| S210B  |   | CS393    | Computer Laboratory   |
| S210L  |   | CS395    | Independent Database Project  |
| S211   | Content Creation in Virtual Reality   | CS399    | Independent Project   |
| S221   | Artificial Intelligence: Principles and Techniques                          | CS399P   | Independent Project   |
| S223A  |   | CS402    | Beyond Bits and Atoms: Designing Technological Tools (EDUC 236)               |
| S224N  | Natural Language Processing (LINGUIST 284)                                  | CS402L   | Beyond Bits and Atoms - Lab (EDUC 211)  |
| S224U  | Natural Language Understanding (LINGUIST 188, LINGUIST 288)                 | CS424M   | Learning Analytics and Computational Modeling in Social Science (EDUC 390)    |

| CS224W | Social Information and Network Analysis                              | CS448H | Topics in Computer Graphics   |
|--------|--|--------|---|
| CS225A | Experimental Robotics  | CS448I | Computational Imaging and Display (EE 367)                                  |
| CS227B | General Game Playing   | CS448J | Concepts and Algorithms of Scientific and Visual Computing                  |
| CS228  | Probabilistic Graphical Models: Principles and Techniques            | CS448Z | Physically Based Animation and Sound  |
| CS229  | Machine Learning (STATS 229)   | CS44N  | Computational Thinking and Systems in the Real-World                        |
| CS229T | Statistical Learning Theory (STATS 231)                              | CS45N  | Computers and Photography: From Capture to Sharing                          |
| CS231A | Computer Vision: From 3D Reconstruction to Recognition               | CS46N  | Big Data, Big Discoveries, Big Fallacies                                    |
| CS231B | The Cutting Edge of Computer Vision                                  | CS476A | Music, Computing, Design I: Art of Design for Computer Music (MUSIC 256A)   |
| CS231M | Mobile Computer Vision   | CS476B | Music, Computing, Design II: Virtual and Augmented Reality for Music (MUSIC |
| CS231N | Convolutional Neural Networks for Visual Recognition                 | CS499  | Advanced Reading and Research   |
| CS232  | Digital Image Processing (EE 368)                                    | CS499P | Advanced Reading and Research   |
| CS233  | The Shape of Data: Geometric and Topological Data Analysis (CME 251) | CS545  | Information and Data Analytics Seminar                                      |
| CS238  | Decision Making under Uncertainty (AA 228)                           | CS546  | Seminar on Liberation Technologies  |
| CS239  | Advanced Topics in Sequential Decision Making (AA 229)               | CS547  | Human-Computer Interaction Seminar  |
| CS240  | Advanced Topics in Operating Systems                                 | CS549  | Human-Computer Interaction in the Real World                                |
| CS240H | Functional Systems in Haskell  | CS54N  | Great Ideas in Computer Science   |
| CS241  | Embedded Systems Workshop  | CS801  | TGR Project   |
| CS242  | Programming Languages  | CS802  | TGR Dissertation  |
| CS243  | Program Analysis and Optimizations                                   | CS90SI | CS + Social Good: Using Web Technologies to Change the World                |
| CS244  | Advanced Topics in Networking  | CS92SI | Hap.py Coder: The Python Programming Language                               |
| ++     | ·  | +      | +   |

Total 162 records, File: db/eecs/computer-science-stanford2015

| +       | +  | +           | +   |
|---------|--|-------------|---|
| id<br>+ | topic  | id          | topic   |
| EE100   | The Electrical Engineering Profession                                | <br> EE292B | Micro and Nanoscale Biosensing for Molecular Diagnostics                    |
| EE101A  | Circuits I   | EE292C      | Chemical Vapor Deposition and Epitaxy for Integrated Circuits and Nanostruc |
| EE101B  | Circuits II  | EE292H      | Engineering and Climate Change  |
| EE102A  | Signal Processing and Linear Systems I                               | EE292I      | Insanely Great Products: How do they get built?                             |
| EE102B  | Signal Processing and Linear Systems II                              | EE292L      | Nanomanufacturing   |
| EE103   | Introduction to Matrix Methods (CME 103)                             | EE292P      | Power Management Integrated Circuits  |
| EE108   | Digital System Design  | EE292T      | SmartGrids and Advanced Power Systems Seminar (CEE 272T)                    |
| EE109   | Digital Systems Design Lab   | EE292X      | Stanford's Little Box Challenge (EE 192X)                                   |
| EE114   | Fundamentals of Analog Integrated Circuit Design (EE 214A)           | EE293A      | Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution ( |
| EE116   | Semiconductor Device Physics   | EE293B      | Fundamentals of Energy Processes (ENERGY 293B)                              |
| EE118   | Introduction to Mechatronics (ME 210)                                | EE300       | Master's Thesis and Thesis Research   |
| EE122A  | Analog Circuits Laboratory   | EE303       | Autonomous Implantable Systems  |
| EE122B  | Introduction to Biomedical Electronics                               | EE304       | Neuromorphics: Brains in Silicon (BIOE 313)                                 |
| EE124   | Introduction to Neuroelectrical Engineering                          | EE311       | Advanced Integrated Circuits Technology                                     |
| EE134   | Introduction to Photonics  | EE314A      | RF Integrated Circuit Design  |
| EE142   | Engineering Electromagnetics   | EE314B      | Advanced RF Integrated Circuit Design                                       |
| EE14N   | Things about Stuff   | EE315A      | VLSI Signal Conditioning Circuits   |
| EE152   | Green Electronics  | EE316       | Advanced VLSI Devices   |
| EE153   | Power Electronics (EE 253)   | EE323       | Energy in Electronics   |
| EE15N   | The Art and Science of Engineering Design                            | EE327       | Properties of Semiconductor Materials                                       |
| EE168   | Introduction to Digital Image Processing                             | EE331       | Biophotonics: Light in Medicine and Biology                                 |
| EE169   | Introduction to Bioimaging   | EE340       | Optical Micro- and Nano-Cavities  |
| EE178   | Probabilistic Systems Analysis                                       | EE346       | Introduction to Nonlinear Optics  |
| EE17N   | Engineering the Micro and Nano Worlds: From Chips to Genes           | EE349       | Advanced Topics in Nano-Optics and Plasmonics                               |
| EE180   | Digital Systems Architecture   | EE356       | Resonant Power Converters and Magnetic Design                               |
| EE190   | Special Studies or Projects in Electrical Engineering                | EE359       | Wireless Communications   |
| EE191   | Special Studies and Reports in Electrical Engineering                | EE364A      | Convex Optimization I (CME 364A, CS 334A)                                   |
| EE191A  | Special Studies and Reports in Electrical Engineering                | EE364B      | Convex Optimization II (CME 364B)   |
| EE191W  | Special Studies and Reports in Electrical Engineering (WIM)          | EE367       | Computational Imaging and Display (CS 448I)                                 |
| EE192X  | Stanford's Little Box Challenge (EE 292X)                            | EE368       | Digital Image Processing (CS 232)   |
| EE203   | The Entrepreneurial Engineer   | EE369A      | Medical Imaging Systems I   |
| EE204   | Business Management for Electrical Engineers and Computer Scientists | EE369B      | Medical Imaging Systems II  |
| EE204S  | Business Management for Electrical Engineers and Computer Scientists | EE373A      | Adaptive Signal Processing  |
| EE212   | Integrated Circuit Fabrication Processes                             | EE376A      | Information Theory (STATS 376A)   |
| EE213   | Digital MOS Integrated Circuits                                      | EE376B      | Network Information Theory (STATS 376B)                                     |
| EE214A  | Fundamentals of Analog Integrated Circuit Design (EE 114)            | EE376D      | Wireless Information Theory   |
| EE214B  | Advanced Analog Integrated Circuit Design                            | EE377       | Information Theory and Statistics (STATS 311)                               |

| EE216  | Principles and Models of Semiconductor Devices         | EE378B  | Inference, Estimation, and Information Processing                             |
|--------|--|---------|---|
| EE21N  | What is Nanotechnology?                                | EE379   | Digital Communication   |
| EE222  | Applied Quantum Mechanics I                            | EE380   | Colloquium on Computer Systems  |
| EE223  | Applied Quantum Mechanics II                           | EE382C  | Interconnection Networks  |
| EE225  | Biochips and Medical Imaging (MATSCI 382, SBIO 225)    | EE382E  | Advanced Multi-Core Systems (CS 316)  |
| EE228  | Basic Physics for Solid State Electronics              | EE384A  | Internet Routing Protocols and Standards                                      |
| EE230  | Biophotonics: Light in Biology                         | EE384B  | Multimedia Communication over the Internet                                    |
| EE234  | Photonics Laboratory                                   | EE384E  | Networked Wireless Systems (CS 244E)  |
| EE236A | Modern Optics  | EE384S  | Performance Engineering of Computer Systems & Networks                        |
| EE236B | Guided Waves   | EE385A  | Robust and Testable Systems Seminar   |
| EE236C | Lasers   | EE387   | Algebraic Error Control Codes   |
| EE237  | Solar Energy Conversion                                | EE390   | Special Studies or Projects in Electrical Engineering                         |
| EE242  | Electromagnetic Waves                                  | EE391   | Special Studies and Reports in Electrical Engineering                         |
| EE243  | Semiconductor Optoelectronic Devices                   | EE392AA | Advanced Digital Transmission   |
| EE251  | High-Frequency Circuit Design Laboratory               | EE392I  | Seminar on Trends in Computing and Communications                             |
| EE252  | Antennas   | EE392N  | INTELLIGENT ENERGY SYSTEMS  |
| EE253  | Power Electronics (EE 153)                             | EE392Q  | Parallel Processors Beyond Multicore Processing                               |
| EE254  | Advanced Topics in Power Electronics                   | EE392R  | Analog-to-Digital Conversion  |
| EE261  | The Fourier Transform and Its Applications             | EE392T  | Seminar in Chip Test and Debug  |
| EE262  | Two-Dimensional Imaging                                | EE392X  | Power Electronics Control and Energy-Aware Design                             |
| EE263  | Introduction to Linear Dynamical Systems (CME 263)     | EE395   | Electrical Engineering Instruction: Practice Teaching                         |
| EE264  | Digital Signal Processing                              | EE396   | Engineering Education and Online Learning (EDUC 391X)                         |
| EE265  | Digital Signal Processing Laboratory                   | EE400   | Thesis and Thesis Research  |
| EE266  | Stochastic Control (MS&E 251)                          | EE402A  | Topics in International Technology Management                                 |
| EE271  | Introduction to VLSI Systems                           | EE402T  | Entrepreneurship in Asian High-Tech Industries                                |
| EE278  | Introduction to Statistical Signal Processing          | EE410   | Integrated Circuit Fabrication Laboratory                                     |
| EE279  | Introduction to Digital Communication                  | EE412   | Advanced Nanofabrication Laboratory   |
| EE27N  | Electronics Rocks                                      | EE414   | RF Transceiver Design Laboratory  |
| EE282  | Computer Systems Architecture                          | EE46    | Engineering For Good: Save the World and Have Fun Doing It                    |
| EE284  | Introduction to Computer Networks                      | EE469B  | RF Pulse Design for Magnetic Resonance Imaging                                |
| EE284B | Advanced Topics in Networking (CS 244)                 | EE47    | Press Play: Interactive Device Design   |
| EE287A | Computer and Network Security (CS 155)                 | EE60N   | Man versus Nature: Coping with Disasters Using Space Technology (GEOPHYS 60N) |
| EE290A | Curricular Practical Training for Electrical Engineers | EE65    | Modern Physics for Engineers  |
| EE290B | Curricular Practical Training for Electrical Engineers | EE801   | TGR Project   |
| EE290C | Curricular Practical Training for Electrical Engineers | EE802   | TGR Dissertation  |
| EE290D | Curricular Practical Training for Electrical Engineers | İ       | į į   |
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|-----------------|---|---------------------|---|
| :510            | The Beauty and Joy of Computing                             | EE128               | Feedback Control Systems  |
| S123            | ISG Test Class  | EE129               | Neural and Nonlinear Information Processing                                     |
| CS149           | Introduction to Embedded Systems                            | EE130               | Integrated-Circuit Devices  |
| CS150           | Components and Design Techniques for Digital System         | EE131               | Semiconductor Electronics   |
| CS152           | Computer Architecture and Engineering                       | EE137A              | Introduction to Electric Power Systems  |
| CS160           | User Interface Design and Development                       | EE140               | Linear Integrated Circuits  |
| CS161           | Computer Security   | EE141               | Introduction to Digital Integrated Circuits                                     |
| CS162           | Operating Systems and System Programming                    | EE142               | Integrated Circuits for Communications  |
| CS164           | Programming Languages and Compilers                         | EE143               | Microfabrication Technology   |
| CS168           | Introduction to the Internet                                | EE144               | Fundamental Algorithms for Systems Modeling, Analys                             |
| CS169           | Software Engineering  | EE145A              | (renamed to EE145L)   |
| CS170           | Efficient Algorithms and Intractable Problems               | EE145B              | Medical Imaging Signals and Systems   |
| CS170           | Computability and Complexity                                | EE145L              | Introductory Electronic Transducers Laboratory                                  |
| CS174           | Combinatorics and Discrete Probability                      | EE145M              | Intro Microcomputer Interfacing Lab   |
| CS174           | Algorithms for Computational Biology                        | EE147               | Introduction to Microelectromechanical Systems                                  |
| CS170<br>CS182  | Neural Basis of Thought and Language                        | EE147<br>  EE149    | Introduction to Microelectromechanical Systems Introduction to Embedded Systems |
| CS182<br>CS184  | Foundations of Computer Graphics                            | EE149<br> EE192     | Mechatronics  |
| CS184<br>CS186  |   |                     |   |
|                 | Introduction to Database Systems                            | EE194               | EE 194 Seminar Home Pages   |
| CS188           | Introduction to Artificial Intelligence                     | EE197               | Field Study   |
| CS191           | Quantum Information Science and Technology                  | EE198               | EE 198 Seminar Home Pages   |
| CS194           | CS 194 Seminar Home Pages                                   | EE199               | Supervised Independent Study  |
| CS195           | Social Implications of Computer Technology                  | EE20                | Structure and Interpretation of Systems and Signals                             |
| CS198           | CS98/198 Directed Group Studies for Advanced Undergraduates | EE201               | Strategic Computing and Communications Technology                               |
| CS199           | Independent Study   | EE210               | Applied Electromagnetic Theory  |
| CS234           | unknown   | EE210B              | Applied Electromagnetic Theory  |
| CS24            | CS Scholars Seminar   | EE213               | Soft X-Rays and Extreme Ultraviolet Radiation                                   |
| CS249A          | Introduction to Embedded Systems                            | EE215A              | Introduction to Robotics  |
| CS250           | VLSI Systems Design   | EE217               | Microwave Circuits  |
| CS252           | Graduate Computer Architecture                              | EE218A              | Introduction to Optical Engineering   |
| CS254           | Topics in VLSI Systems Design                               | EE219               | unknown   |
| CS260           | Research Topics in Human-Computer Interaction               | EE219A              | Numerical Simulation and Modeling   |
| CS260A          | User Interface Design and Development                       | EE219B              | Logic Synthesis for Hardware Systems  |
| CS262           | Advanced Topics in Computer Systems                         | EE219C              | Computer-Aided Verification   |
| CS262A          | Advanced Topics in Computer Systems                         | EE220               | Neural & Nonlinear Information Processing                                       |
| CS263           | Design of Programming Languages                             | EE220A              | Advanced Control Systems I  |
| CS264           | Implementation of Programming Languages                     | EE220B              | Experiential Advanced Control Design I  |
| CS265           | Advanced Programming Language Implementation                | EE221A              | Linear System Theory  |
| CS266           | Introduction to System Performance Analysis                 | EE222               | Nonlinear SystemsAnalysis, Stability and Control                                |
| CS267           | Applications of Parallel Computers                          | EE223               | Stochastic Systems: Estimation and Control                                      |
| CS268           | Graduate Computer Networking                                | EE224A              | Digital Communication   |
| CS274           | Computational Geometry                                      | EE224B              | Fundamentals of Wireless Communications   |
| CS275           | unknown   | EE225A              | Digital Signal Processing   |
| CS276           | Cryptography  | EE225B              | Digital Image Processing  |
| CS280           | Computer Vision   | EE225C              | VLSI Signal Processing  |
| CS281A          | Statistical Learning Theory                                 | EE225D              | Audio Signal Processing   |
| CS282           | Algebraic Algorithms  | EE226               | unknown   |
| CS283           | Advanced Computer Graphics Algorithms and Techniques        | EE226A              | Random Processes in Systems   |
| CS284           | Computer-Aided Geometric Design                             | EE227A              | Introduction to Convex Optimization   |
| CS284A          | Foundations of Computer Graphics                            | EE227R              | Convex Optimization   |
| CS284A<br>CS285 | Solid Free-Form Modeling and Fabrication                    | EE227B1<br>  EE228A | High Speed Communications Networks  |
| CS285<br>CS286  | Implementation of Database Systems                          | EE226A<br>  EE229   | Information Theory and Coding   |
| CS286B          | • =   | EE229<br>  EE229A   | Information Theory and Coding   |
|                 | Implementation of Data Base Systems                         | •                   | •   |
| CS287           | Advanced Robotics   | EE230               | Solid State Electronics   |
| CS288           | Natural Language Processing                                 | EE230A              | Integrated-Circuit Devices  |
| CS289           | Knowledge Representation and Reasoning                      | EE230B              | Solid State Devices   |
| CS294           | CS 294 Seminar Home Pages                                   | EE230C              | Solid State Electronics   |
| CS297           | Field Studies in Computer Science                           | EE231               | Solid State Devices   |
| CS298           | CS 298 Seminar Home Pages                                   | EE232               | Lightwave Devices   |
| CS299           | Individual Research   | EE233               | Lightwave Systems   |
| CS3             | Introduction to Symbolic Programming                        | EE235               | Nanoscale Fabrication   |
| CS301           | Teaching Techniques for Computer Science                    | EE236A              | Quantum and Optical Electronics   |

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|  | CS302       | Designing Computer Science Education                            | EE238    | Superconductive Devices and Circuits                |
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| Completion of Work in Computer Science 113   F7248   Accounted Transparent Circuits for Communications   |             |   |          |   |
| Control   Computer for Tomputer Science AIR   FR.481   Processing and Layoutt.   Advanced In Computer Science AIR   FR.482   Processing and Layoutt.   Advanced Intercept   Control   Co   |             |   |          |   |
| CREATE   Complexion or Work in Computer Science ACC   TREAT   Prodemental Algorithms for Systems Modeling, Amolysm.  |             |   |          |   |
| Individual Study for Decrosal Students   IEEE   Individual Study for Decrosal Students   IEEE   Individual Study for Decrosal Students   IEEE   Individual Study for Interpretation of Computer Program.   IEEE      |             |   |          | · · · · · · · · · · · · · · · · · · ·               |
| ESCIA   The Ctrouture and TheoryteisLine of Computer Progra   BE247   Interdaced in URI Technology   |             |   |          |   |
| EXECUTED   The Curvature and Enterpretation of Computer Program.   EXECUTED  |             | ·   |          | •             |
| Cost   Data Structures (UMLis section)   EE249   Title Structures (UMLis section)   EE249   Advanced Topics in Internation of The In   |             |   |          | ·   |
| CoSton   Continue Structures (UCNies section)   EE290A   |             |   |          | ·   |
| Geolic   Machine Structures (UCNies section)   E2290   |             |   |          |   |
| CSSIC   Machine Structures (UCOles section)   ED300   Markened Topics in Solid State Devices   |             |   |          |   |
| CSP  |             |   |          |   |
| CSSA   Internative Chormography in 3D Tule-Insersive Spaces   HE2905   |             | · · · · · · · · · · · · · · · · · · ·                           |          | ·   |
| CSSP   TSSP   Directed Group Studies for Anvanced Undergraduates   EE290E   Advanced Topics   Advanced Topics  |             |   |          | · · · · · · · · · · · · · · · · · · ·               |
| CSPB   Pacel for Programmers   FE290F   Advanced Topics   FE200F   CREATED   FE200F   CREATED   FE200F   FE20   |             |   |          | · -   |
| CSSP   Pascal for Programmers (Salf Pancal)   ESP.006  |             |   |          |   |
| CSPC   C for Programmers   SE2008   Semiconductor Manufacturing  |             |   |          | ·   |
| CSSPE   Productive Use of the UNIX Environment   EB2901   Advanced Topics in Electrical Engineering  | CS9C        | · · · · · · · · · · · · · · · · · · ·                           | EE290H   |   |
| CSSS-1   (see CSSS)   EE2901   Advanced Topics in System Theory  | CS9D        | Scheme and Functional Programming for Programmers               | EE290I   | Advanced Topics in Wireless Communication           |
| CSSPF   Csee CSSF    CSSPF   C+ for Programmers   EE2900   | CS9E        | Productive Use of the UNIX Environment                          | EE290J   | Advanced Topics in Electrical Engineering           |
| CSSPF   C++ for Programmers   EE2900   Advanced Topics in Roohectronics  | CS9E-1      | (see CS9E)  | EE290N   | Advanced Topics in System Theory                    |
| CSSP   | CS9E-2      | (see CS9E)  | EE290N-1 | Also: PACKARD, A K                                  |
| CSSP   | CS9F        | C++ for Programmers   |          | Advanced Topics in Control                          |
| ATDP9 Academic Talent Development Program (ATDP) ATDP5 Academic Talent Development Program (ATDP) BE144 Bioengineering 144 CRM Center for New Media CSUML UMass Lowell OFL at UC Berkeley CTMST Prof Hilfinger's Contest EF2905 Control and Optimization of Distributed Parameters CTMST Prof Hilfinger's Contest EF278 Scientific and Engineering Problem Solving EF178 Scientific and Engineering Problem Solving EF180 Linear and Nonlinear Circuits EF2916 Linear and Nonlinear Circuits EF1816 Introduction to Quantum and Optical Electronics EF1816 Introduction to Quantum and Optical Electronics EF1816 Introduction to EECS EF181 Strategic Computing and Communications Technology EF1816 Introduction to EECS EF1816 Colliver EF1810 - Integrated Circuit Devices EF1816 Calliver EF1810 - Integrated Circuit Devices EF1817 EF1816 Computing and Communications EF1817 EF18     |             |   |          |   |
| ATDPS Academic Telent Development Program (ATDP) BE144 Bioengineering 144 CCNM Center for New Media CSUML UMass Lowell OPL at UC Berkeley CTEST Porf Hilfinger's Contest EE290X Strategic Computing and Communications Technology CSUML UMass Lowell OPL at UC Berkeley CTEST Porf Hilfinger's Contest EE290X Strategic Computing and Communications Technology CTEST Porf Hilfinger's Contest EE291 Control and Optimization of Distributed Parameters CENTROL Linear and Nonlinear Circuits EE298 EE298 EE298 Seminar Home Pages EE104 Linear and Nonlinear Circuits EE104 Linear and Nonlinear Circuits EE136 Introduction to Quantum and Optical Electronics EE136 Introduction to Distributed Parameters EE301 Teaching Techniques for Electrical Engineering EE136 Introduction to EECS EE130 Introduction to EECS EECSIAL Strategic Computing and Communications Technology EE442 Introduction to Microelectronic Circuits EE301 Teaching Techniques for Electrical Engineering EE440 Introduction to Digital Electronics EE440 Introduction to Digital Electronics EE441 Introduction to Digital Engineering EE441 Introduction to Digital Engineering EE441 Introduction to Microelectronic Circuits EE441 Introduction to Digital Engineering EE441 Introduction to EECS EE441 Introduction to EECS EE441 Introduction to Digital Engineering EE441 Introduction to Microelectronic Circuits EE441 Introduction to EECS EE441 Introduction to Digital Engineering EE441 Calview EE242 - Digital Communication EE599 Individual Study and Research for Undergraduates EE591 Individual External Engineering EECSION Structure and Design Techniques for Digital System EE591 Computer Architecture and Engineering EECSION Structure and Integrated Circuits (MAS-IC) EECSION Structure EA44 - Analog-Digital Integrated Circuits EECSION EECSION Structure and Integrated Circuits (MAS-IC) EEM142 Calview EE241 - Advanced Integrated Circuits ECINESE EEN143 Integrated Circuits (MAS-IC) EEM145                 |             |   |          |   |
| APUPP   Academic Talent Development Program (ATDP)   EE2907   Advanced Topics in Electrical Engineering   Advanced Topics in Electrical Engineering   Advanced Topics in Electronics   EE2907   Country   EE2907   Country   EE2907   Country   EE2908   EE2908   EE2909   Country   EE2909   Country   EE2909   Country   EE2909   Country   EE2909   EE2916   EE2909   Individual Research   EE2010                |   | •        | • =   |
| BE144   Bioengineering 144   EE290X   Strategic Computing and Communications Technology CNM Center for New Media   EE290Y Organic Materials in Electronics   EE291   Control and Optimization of Distributed Parameters  |             |   |          |   |
| CSUML UMass Lowell OPL at UC Berkeley  CSUML UMass Lowell OPL at UC Berkeley  CFRST Prof Hilfinger's Contest Prof Hilfinger's Contest F7S Scientific and Engineering Problem Solving EF298 EF104 Linear and Nonlinear Circuits EF136 Introduction to Quantum and Optical Electronics EF136 Introduction to Quantum and Optical Electronics EF136 Introduction to Duantum and Optical Electronics EF136 Introduction to Duantum and Optical Electronics EF136 Introduction to Discription EFCS EFCS10 Introduction to Discription EFCS EFCS11 Introduction to Microelectronic Circuits EFCS12 Introduction to Discription EFCS EFCS13 Introduction to Discription EFCS EFCS14 Introduction to Microelectronic Circuits EFCS15 Introduction to Discription EFCS EFCS16 Introduction to Discription EFCS EFCS17 Introduction to Discription EFCS EFCS18 Introduction EFCS EFCS17 Introduction to Discription EFCS EFCS18 Introduction EFCS18 EFCS18 Introduction EFCS EFCS18 Introduction EFCS EFCS18 Introduction EFCS EFCS18 Introduction EFCS18 EFCS18 Introduction EFCS18 EFCS18 Introduction EFCS18 EFCS18 Introduction EFCS18 In |             |   | 1        |   |
| CSUML DASS Lowell OPL at UC Berkeley Prof Bilfinger's Contest Prof Bilfinger's Contest E775 Scientific and Engineering Problem Solving E775 Scientific and Engineering Problem Solving EE104 Linear and Nonlinear Circuits EE105 Introduction to Quantum and Optical Electronics EE106 Introduction to Quantum and Optical Electronics EE107 Introduction to EECS EECSBA1 Introduction to Digital Electronics EECSBA1 Introduction to Digital Electronics EECSBA1 Introduction to Digital Integrated Circuit Devices EECSBA1 Introduction to Digital Electronics EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 Introduction to Digital Electronics EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 EE298 Introduction to Digital Electronics EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 Introduction to Digital Integrated Circuits EECSBA1 EE291  |             |   | :        |   |
| Prof Hilfinger's Contest   EE291E   Hybrid Systems and Intelligent Control   |             |   |          |   |
| E778   Scientific and Engineering Problem Solving   EE298   EE 298 Seminar Home Pages  |             |   |          | •   |
| EB104   Linear and Monlinear Circuits   EB290   Individual Research  |             | ·   |          |   |
| EE136  |             |   | !        |   |
| EE146  |             |   |          |   |
| EECS1  |             | -   |          |   |
| EECSBA1   Strategic Computing and Communications Technology   EE42   Introduction to Digital Electronics   |             |   | !        |   |
| N130   CalView EE130 - Integrated Circuit Devices   EE43   Introductory Electronics Lab     N140   CalView EE140 - Linear Integrated Circuits   EE84   Hands-on Ham Radio     N141   CalView EE141 - Interduction to Digital Integrated Circuits   EE97   Field Study     N142   CalView EE142 - Integrated Circuits for Communications   EE98   EE 98 Seminar Home Pages     N224   CalView EE224 - Digital Communication   EE99   Individual Study and Research for Undergraduates     N225   CalView EE221 - Solid State Devices   EECS120   Signals and Systems     N231   CalView EE231 - Solid State Devices   EECS120   Components and Design Techniques for Digital System     N240   CalView EE240 - Analog Integrated Circuit Design and Analysis   EECS150   Components and Design Techniques for Digital System     N241   CalView EE241 - Advanced Digital Integrated Circuits   EECS20N   Structure and Interpretation of Signals and Systems     N242   CalView EE242 - Advanced Integrated Circuits for Communications   EECS245   Intro to MEMS Design     N243   CalView EE243 - Advanced Ir Processing and Layout   EEH16A   Senior Honors Thesis Research     N245   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW130   Integrated-Circuit Devices (MAS-IC)     N250   CalView CS250 - VLSI Systems Design   EEW140   Linear Integrated Circuits (MAS-IC)     N250   CalView CS250 - Research Topics in Human-Computer Interaction EE Classes   EEW230   Integrated Circuit Devices     EE010   Electronic Techniques for Engineering   EEW230   Advanced Analog Integrated Circuits (MAS-IC)     Advanced Analog Integrated Circuits (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)     Advanced Analog Integrated Circuits (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   Solid-State Devic         |             |   |          |   |
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| N142   CalView EE142 - Integrated Circuits for Communications   EE98   EE 98 Seminar Home Pages  |             | · · · · · · · · · · · · · · · · · · ·                           | !        |   |
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| N241   CalView EE241 - Advanced Digital Integrated Circuits   EECS20N   Structure and Interpretation of Signals and Systems   N242   CalView EE242 - Advanced Integrated Circuits for Communications   EECS245   Intro to MEMS Design   N243   CalView EE243 - Advanced IC Processing and Layout   EEH196A   Senior Honors Thesis Research   N245   CalView EE245 - Introduction to MEMS Design   EEW130   Integrated-Circuit Devices (MAS-IC)   N247   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW140   Linear Integrated Circuits (MAS-IC)   N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)   N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)   N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices   EEW231   Solid-State Devices (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   Advanced Analog Integrated Circuits (MAS-IC)   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW231   Solid-State Devices (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and Circuits (MAS-IC)   N260   CalView CS260 - Research Topics and  | N231        | CalView EE231 - Solid State Devices                             | EECS150  | Components and Design Techniques for Digital System |
| N242   CalView EE242 - Advanced Integrated Circuits for Communications   EECS245   Intro to MEMS Design   N243   CalView EE243 - Advanced IC Processing and Layout   EEH196A   Senior Honors Thesis Research   N245   CalView EE245 - Introduction to MEMS Design   EEW130   Integrated-Circuit Devices (MAS-IC)   N247   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW140   Linear Integrated Circuits (MAS-IC)   N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)   N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)   N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices   EE100   Electronic Techniques for Engineering   EEW231   Solid-State Devices (MAS-IC)   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   | N240        | CalView EE240 - Analog Integrated Circuit Design and Analysis   | EECS152  | Computer Architecture and Engineering               |
| N243   CalView EE243 - Advanced IC Processing and Layout   EEH196A   Senior Honors Thesis Research   N245   CalView EE245 - Introduction to MEMS Design   EEW130   Integrated-Circuit Devices (MAS-IC)   N247   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW140   Linear Integrated Circuits (MAS-IC)   N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)   N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)   N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices   EE100   Electronic Techniques for Engineering   EEW231   Solid-State Devices (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   | N241        | CalView EE241 - Advanced Digital Integrated Circuits            | EECS20N  | Structure and Interpretation of Signals and Systems |
| N245   CalView EE245 - Introduction to MEMS Design   EEW130   Integrated-Circuit Devices (MAS-IC)     N247   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW140   Linear Integrated Circuits (MAS-IC)     N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)     N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)     N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices     EEW100   Electronic Techniques for Engineering   EEW231   Solid-State Devices (MAS-IC)     EEW101   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW102   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW103   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW104   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW105   Microelectronic Devices and Circuits (MAS-IC)     EEW107   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW108   EEW109   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW109   EEW109   EEW109   EEW240   Advanced Analog Integrated Circuits (MAS-IC)     EEW109   EEW109   EEW109   EEW109   EEW109   EEW109     EEW109   EEW   | N242        | CalView EE242 - Advanced Integrated Circuits for Communications | EECS245  | Intro to MEMS Design                                |
| N247   CalView EE247 - Analog-Digital Interfaces in VLSI Technology   EEW140   Linear Integrated Circuits (MAS-IC)     N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)     N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)     N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices     EEW231   Solid-State Devices (MAS-IC)     EEW240   Advanced Analog Integrated Circuits     EEW240   Advanced Analog Integrated Circu   |             | ·   |          |   |
| N250   CalView CS250 - VLSI Systems Design   EEW141   Digital Integrated Circuits (MAS-IC)     N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)     N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices     EEW141   Digital Integrated Circuits (MAS-IC)     EEW142   Integrated Circuit Devices     EEW230A   Integrated-Circuit Devices     EEW231   Solid-State Devices (MAS-IC)     EEW240   Advanced Analog Integrated Circuits (MAS-IC)  |             |   |          |   |
| N252   CalView CS252 - Graduate Computer Architecture   EEW142   Integrated Circuits for Communications (MAS-IC)   N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices   EEW230A   Solid-State Devices (MAS-IC)   EEW231   Solid-State Devices (MAS-IC)   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   |             | ·   |          | •             |
| N260   CalView CS260 - Research Topics in Human-Computer Interaction EE Classes   EEW230A   Integrated-Circuit Devices   EEW230A   EEW231   Solid-State Devices (MAS-IC)   EEW251   Microelectronic Devices and Circuits   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   |             | ·   |          |   |
| EE100   Electronic Techniques for Engineering   EEW231   Solid-State Devices (MAS-IC)   EEW240   Advanced Analog Integrated Circuits (MAS-IC)  |             |   |          | · · · · · · · · · · · · · · · · · · ·               |
| EE105   Microelectronic Devices and Circuits   EEW240   Advanced Analog Integrated Circuits (MAS-IC)   |             | -   |          |   |
|  |             |   |          |   |
| EE117   Electromagnetic Fields and Waves   EEW240A   Analog Integrated Circuits  |             |   |          |   |
|  | EE117       | Electromagnetic Fields and Waves                                | EEW240A  | Analog Integrated Circuits                          |

| EE117B | Electromagnetic Fields and Waves II           | EEW240B | Advanced Analog Integrated Circuits  |
|--------|---|---------|--|
| EE118  | Introduction to Optical Engineering           | EEW241  | Advanced Digital Integrated Circuits (MAS-IC)                              |
| EE119  | Introduction to Optical Engineering           | EEW241A | Introduction to Digital Integrated Circuits                                |
| EE121  | Introduction to Digital Communication Systems | EEW242  | Advanced Integrated Circuits for Communications (MAS-IC)                   |
| EE122  | Introduction to Communication Networks        | EEW244  | Fundamental Algorithms for System Modeling, Analysis, and Optimization (MA |
| EE123  | Digital Signal Processing                     | EEW245  | Introduction to MEMS Design (MAS-IC)                                       |
| EE125  | Introduction to Robotics                      | EEW247  | Analysis and Design of VLSI Analog-Digital Interface Integrated Circuits ( |
| EE126  | Probability and Random Processes              | EEW290C | Advanced Topics in Circuit Design (MAS-IC)                                 |
| +      | +   |         | ++   |

Total 268 records, File: db/eecs/eecs-berkeley2015

| id      | title  | id      | title  |
|---------|--|---------|--|
| CB02201 | Programming for Scientists                                       | CB02651 | New Technologies and Future Markets                              |
| CB02223 | Personalized Medicine: Understanding Your Own Genome             | CB02652 | Fundamentals of Biotechnology                                    |
| CB02250 | Introduction to Computational BiologyThis Section Cancelled      | CB02654 | Biotechnology Enterprise Development                             |
| CB02251 | Introduction to Computational Molecular Biology                  | CB02700 | M.S. Thesis Research   |
| CB02252 | Introduction to Computational Cell Biology                       | CB02701 | Current Topics in Computational Biology                          |
| CB02261 | Quantitative Cell and Molecular Biology Laboratory               | CB02702 | Computational Biology Seminar                                    |
| CB02450 | Automation of Biological Research: Robotics and Machine Learning | CB02710 | Computational Genomics   |
| CB02500 | Undergraduate Research in Computational Biology                  | CB02711 | Computational Molecular Biology and Genomics                     |
| CB02510 | Computational Genomics   | CB02712 | Computational Methods for Biological Modeling and Simulation     |
| CB02512 | Computational Methods for Biological Modeling and Simulation     | CB02730 | Cell and Systems Modeling  |
| CB02530 | Cell and Systems Modeling  | CB02740 | Bioimage Informatics   |
| CB02600 | M.S. ResearchThis Section Cancelled                              | CB02750 | Automation of Biological Research: Robotics and Machine Learning |
| CB02601 | Programming for Scientists                                       | CB02760 | Laboratory Methods for Computational Biologists                  |
| CB02602 | Professional Issues in Computational Biology                     | CB02801 | Computational Biology Internship                                 |
| CB02613 | Algorithms and Advanced Data Structures                          | CB02900 | Ph.D. Thesis Research  |

Total 30 records, File: db/eecs/cmu/computational-biology-cmu2015

| id       | title  | id       | title  |
|----------|--|----------|--|
| HCI05292 | Learning Media Methods   | HCI05688 | Small Group Study in HCI   |
| HCI05320 | Social Web   | HCI05689 | Independent Study in HCI - Grad                                      |
| HCI05341 | Organizational Communication                                     | HCI05771 | HCI Process and Theory   |
| HCI05391 | Designing Human Centered Software                                | HCI05772 | Social Perspectives in HCI   |
| HCI05392 | Interaction Design Overview: Interaction Design Overview         | HCI05773 | Computer Science Perspectives in HCI                                 |
| HCI05395 | Applications of Cognitive Science                                | HCI05774 | Design Perspectives in HCII  |
| HCI05410 | User-Centered Research and Evaluation                            | HCI05775 | Cognitive Perspectives in HCIIThis Section Cancelled                 |
| HCI05413 | Human Factors  | HCI05795 | Applications of Cognitive Science                                    |
| HCI05418 | Design Educational Games   | HCI05813 | Human Factors  |
| HCI05430 | Programming Usable Interfaces                                    | HCI05814 | Perception   |
| HCI05431 | Software Structures for User Interfaces                          | HCI05818 | Design Educational Games   |
| HCI05432 | Personalized Online Learning                                     | HCI05820 | Social Web   |
| HCI05433 | User Interface Lab: PUI Prototype Lab                            | HCI05821 | Applied Research Methods: Qualitative                                |
| HCI05434 | Machine Learning in Practice                                     | HCI05822 | Applied Research Methods: Quantitative                               |
| HCI05436 | Usable Privacy and Security                                      | HCI05823 | E-Learning Design Principles: E-Learning Design Principles           |
| HCI05499 | Special Topics in HCI: Sensemaking                               | HCI05832 | Personalized Online Learning   |
| HCI05540 | Rapid Prototyping of Computer Systems                            | HCI05833 | Gadgets, Sensors and Activity Recognition in HCI                     |
| HCI05571 | Undergraduate Project in HCI                                     | HCI05834 | Applied Machine Learning   |
| HCI05589 | Independent Study in HCI-UG                                      | HCI05836 | Usuable Privacy and Security   |
| HCI05600 | HCI Pro Seminar  | HCI05837 | Ubiquitous Computing   |
| HCI05610 | User-Centered Research and Evaluation                            | HCI05839 | The Data Pipeline: Collecting and Using Data for Interactive Systems |
| HCI05630 | Programming Usable Interfaces                                    | HCI05863 | Introduction to Human Computer Interaction for Technology Executives |
| HCI05631 | Software Structures for User Interfaces                          | HCI05872 | Rapid Prototyping of Computer Systems                                |
| HCI05633 | User Interface Lab: PUI Prototype Lab                            | HCI05888 | Practicum in HCI   |
| HCI05650 | Interaction Design Studio  | HCI05891 | Designing Human Centered Software                                    |
| HCI05651 | Interaction Design Fundamentals: Interaction Design Fundamentals | HCI05897 | Web Accessibility: Web Accessibility                                 |
| HCI05671 | HCI Project  | HCI05898 | Special Topics: Presentation through Improvisational Acting          |
| HCI05672 | HCI Project II   | HCI05899 | Special Topics in HCI: Sensemaking                                   |
| HCI05681 | METALS Project 1   | HCI05982 | Independent Teaching Experience                                      |
| HCI05682 | METALS Project 2   | HCI05997 | Reading and Research in HCI  |

Total 60 records, File: db/eecs/cmu/human-computer-interaction-cmu2015

| Id   title     | Communities  <br> <br> <br> <br> <br> <br> |
|--|--|
| CS15505   Study Abroad   CS15509   Computer Science Co-Op   CS15509   Computer Science Facticum   CS15509   CS15500   Computer Science Facticum   CS15500      | Communities  <br> <br> <br> <br> <br> <br> |
| CS15504 Introduction to Computer Science Practicum CS15104 Principles of Computer Science CS15504 Introduction to Computing for Creative Practice CS15110 Principles of Computing CS15111 Principles of Computing CS15111 Introduction to Data Structures CS15112 Introduction to Data Structures CS15112 Introduction to Data Structures CS15112 Principles of Imperative Computation CS15121 Introduction to Data Structures CS15121 Principles of Imperative Computation CS15122 Principles of Imperative Computation CS15124 Preshman Immigration Course CS15125 Preshman Immigration Course CS15125 Preshman Immigration Course CS15126 Computer Preshman Immigration Course CS15127 Preshman Immigration Course CS15128 Preshman Immigration Course CS15129 Special Topics Special Topics Distorber Scientists CS15129 Special Topics Insucovering Logic CS15129 Special Topics Insucovering Logic CS15129 Special Topics Distorber Systems CS15213 Introduction to Computer Systems CS15213 Introduction to Computer Systems CS15214 Principles of Software Construction: Objects, Design, and Concurrency CS15213 Principles of Communication for Computer Sciencies CS15213 Special Topic: Applied Computational Intelligence Lab CS15213 Special Topic: Rapid Prototyping Technologies CS15214 Special Topic: Images of Computational Intelligence Lab CS15215 Special Topic:  | Communities  <br> <br> <br> <br> <br> <br> |
| Introduction to Computing for Creative Practice   CS15509   Foreigness of Computing   CS15501   Principles of Computing   Special Topics   S   | Communities  <br> <br> <br> <br> <br> <br> |
| CS15101   Principles of Computing (CS1501   Endamentals of Programming and Computer Science (CS15112   Introduction to Data Structures (CS15121   Introduction to Data Structures (CS1501   Endamentals of Programming and Computation (CS1501   Principles of Imperative Computation (CS1501   Principles of Imperative Computation (CS1501   CS15128   Preshman Immigration Course (CS1501   CS15129   Preshman Immigration Course (CS1501   CS15120   Computer Design (CS15120   CS15121   Computer Design (CS15120   CS15121     | Communities  <br> <br> <br> <br> <br> <br> |
| CS15121   Fundamentals of Programming and Computer Science   CS15603   Special Topics: Seminar on Innovating for Underserved CS15122   Principles of Imperative Computation   CS15604   Timurgartion Course   CS15605   CS15122   Principles of Imperative Computation   CS15612   CS15123   Preshman Immigration Course   CS15605   CS15120   Operating System Design and Implementation   CS15613   Great Practical Ideas for Computer Scientists   CS15612   Operating System Practicum   CS15613   Great Practical Ideas for Computer Scientists   CS15612   Operating System Practicum   CS15613   Practicular Sequential Data Structures and Algorithms   CS15618   Parallel Computer Architecture and Programming   CS15619   Special Topics: Discovering Logic   CS15619   Parallel and Sequential Data Structures and Algorithms   CS15624   SS15612   CS15624   SS15612   Computer Scientists   CS15624   SS15624   SS15624   SS15624   SS15625   SS | Communities  <br> <br> <br> <br> <br> <br> |
| CS15121   Introduction to Data Structures   CS15601   Timmigration Course  | <br> <br> <br> <br> <br>                   |
| Principles of Imperative Computer Scientists   CS15229   Principles of Functional Course   CS151219   Preshman Immigration Course   CS151219   Preshman Immigration Course   CS151210   CS151210   Preshman Immigration Course   CS151311   CS151510   Principles of Functional Programming   CS151510   Parallel Computer Architecture and Programming   CS151510   Parallel and Sequential Data Structures and Algorithms   CS151511   Parallel Computer Architecture and Programming   CS15121   Principles of Software Construction: Objects, Design, and Concurrency   CS15121   Principles of Software Construction: Objects, Design, and Concurrency   CS15121   Principles of Software Construction: Objects, Design, and Concurrency   CS15121   Computer Section   CS15121   CS15121   Computer Section   CS15121   CS15121   Computer Section   CS15121   CS15   | Science                                    |
| S15128   Freshman Immigration Course   CS15121   Compiler Design   CS15121   Compiler Design   CS15121   CS15121   Great Practical Ideas for Computer Scientists   CS15615   Database Applications   CS15151   Special Topics: Discovering Logic   CS15618   CS15618   Parallel Computer Architecture and Programming   CS15519   Special Topics: Discovering Logic   CS15618   Special Topics: Discovering Logic   CS15618   Special Topics: Discovering Logic   CS15619   CS15   | Science                                    |
| Still29   Freshman Immigration Course IT   | Science                                    |
| CS15131   Great Practical Ideas for Computer Scientists   CS15615   Principles of Functional Programming   CS15190   Principles of Functional Programming   CS15191   Special Topics: Discovering Logic   CS15191   CS   | Science                                    |
| Secial Topics: Discovering Logic   Principles of Functional Programming   CS151919   Special Topics: Discovering Logic   CS15210   Parallel and Sequential Data Structures and Algorithms   CS15213   Introduction to Computer Systems   CS15213   Introduction to Computer Systems   CS15214   Principles of Software Construction: Objects, Design, and Concurrency   CS15217   Principles of Software Construction: Objects, Design, and Concurrency   CS15218   Principles of Software Construction: Objects, Design, and Concurrency   CS15217   Technical Communication for Computer Sciences   CS15218   Secial Topic: Applied Computational Intelligence Lab   CS15219   Special Topic: Applied Computational Intelligence Lab   CS15219   Special Topic: History of Computing   CS15229   Special Topic: Rapid Prototyping Technologies   CS15229   Special Topic: Rapid Prototyping Technologies   CS15229   Competition Programming and Problem Solving   CS15229   Special Topic: Inages of Computing   CS15229   Special Topic: Innovating for Underserved Communities   CS15229   Special Topic: Innovating for Underserved Communities   CS15229   Computations of Programming Languages   CS15229   Special Topic: Sp   | <br>                                       |
| Special Topics: Discovering Logic   CS15199   Special Topics: Discovering Logic   CS15210   Parallel and Sequential Data Structures and Algorithms   CS15213   Introduction to Computer Systems   CS15214   Principles of Software Construction: Objects, Design, and Concurrency   CS15624   Str. Foundations of Cyber-Physical Systems   CS15214   Principles of Software Construction: Objects, Design, and Concurrency   CS15624   Str. Foundations of Cyber-Physical Systems   CS15214   Technical Communication for Computer Scientists   CS15624   CS15640   Distributed Systems: Distributed Systems   D   | <br> Science                               |
| CS15210   Parallel and Sequential Data Structures and Algorithms   CS1523   Special Topic: Digital Signal Processing for Computer CS15213   Introduction to Computer Systems   CS15214   Principles of Software Construction: Objects, Design, and Concurrency   CS15642   CS15624   Principles of Software Construction: Objects, Design, and Concurrency   CS15647   Web Application Development   CS15221   Technical Communication for Computer Science   CS15640   Distributed Systems: Distributed Systems   CS15221   Great Theoretical Ideas in Computer Science   CS15641   Computer Networks   CS15291   Special Topic: Applied Computational Intelligence Lab   CS15648   Studio in Big Data Systems   CS15292   Special Topic: History of Computing   CS15649   Seminar Data Systems   CS15649   Seminar D   | Science                                    |
| Principles of Software Construction: Objects, Design, and Concurrency   CS15637   Web Application Development  | :  |
| CS15221   Technical Communication for Computer Scientists   CS15251   Great Theoretical Ideas in Computer Science   CS15641   Computer Networks  |  |
| CS15251   Great Theoretical Ideas in Computer Science   CS15641   Computer Networks  | ĺ  |
| CS15291   Special Topic: Applied Computational Intelligence Lab   CS15292   Special Topic: History of Computing   CS15648   Seminar Data Systems   CS15294   Special Topic: Rapid Prototyping Technologies   CS15659   CS15650   Algorithms and Advanced Data Structures   CS15295   Competition Programming and Problem Solving   CS15651   Algorithm Design and Analysis   CS15296   Special Topic: Innovating for Underserved Communities: Field Research Basics   CS15652   Foundation Programming Languages   CS156303   Special Topic: Seminar on Innovating for Underserved Communities   CS15659   Probability and Computing   CS15312   Foundations of Programming Languages   CS1561312   Foundations of Software Engineering   CS1561313   Foundations of Software Engineering   CS15661   Interaction and Expression using the Pausch Bridge Lig   CS15314   Special Topic: Programming Language Semantics   CS15661   Computer Graphics   CS15662   Computer Graphics   CS15317   Constructive Logic   CS15664   Technical Animation   CS15664   Technical Animation   CS15664   Technical Animation   CS15664   Technical Animation   CS15669   Technical Animation   Technical Animation   Technical Animation   Technical Animation   Techni   |  |
| CS15292   Special Topic: History of Computing   CS15294   Special Topic: Rapid Prototyping Technologies   CS15650   Algorithms and Advanced Data Structures   CS15295   Competition Programming and Problem Solving   CS15651   Algorithms and Advanced Data Structures   CS15295   Special Topic: Images of Computing   CS15652   Foundation Programming Languages   CS15652   Foundation Programming Languages   CS15302   Special Topic: Seminar on Innovating for Underserved Communities   CS15657   Constructive Logic   CS15303   Special Topic: Seminar on Innovating for Underserved Communities   CS15657   Constructive Logic   CS15312   Foundations of Programming Languages   CS15661   Interaction and Expression using the Pausch Bridge Lig   CS15314   Special Topic: Programming Language Semantics   CS15662   Computer Graphics   CS15663   Computer Graphics   CS15317   Constructive Logic   CS15664   Technical Animation   CS15317   Constructive Logic   CS15664   Technical Animation   CS15666   CS15322   Introduction to Computer Music   CS15669   Masters Research   CS15669   Masters Research   CS15348   Embedded Systems   CS15669   Independent Study in the Computer Sciences   CS15314   Algorithms and Advanced Data Structures   CS15691   Practicum   CS15691   Practicum   CS15695   CS15694   Special Topic: Cognitive Robotics   CS15695   Graduate Reading and Research   CS15695   Probability and Computing   CS15698   Graduate Reading and Research   CS15699   Probability and Computing   CS15699   CS16404   CS16406    |  |
| CS15294   Special Topic: Rapid Prototyping Technologies   CS15650   Competition Programming and Problem Solving   CS15651   Algorithms and Advanced Data Structures   CS15295   Competition Programming and Problem Solving   CS15651   Algorithms and Advanced Data Structures   CS15302   Special Topic: Innovating for Underserved Communities: Field Research Basics   CS15652   Foundation Programming Languages   CS15330   Special Topic: Seminar on Innovating for Underserved Communities   CS15659   Probability and Computing   CS15651   Foundations of Programming Languages   CS15611   Foundations of Software Engineering   CS15612   Computer Graphics   CS15314   Special Topic: Programming Language Semantics   CS15662   Computer Graphics   CS15317   Constructive Logic   CS15664   Technical Animation   CS15664   Technical Animation   CS15319   Cloud Computing   CS15664   Technical Animation   CS15348   Embedded Systems   CS15348   Embedded Systems   CS15669   Masters Research   CS15349   Introduction to Computer Music   CS15669   Independent Study in the Computer Sciences   CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum   CS15697   Graduate Reading and Research   CS15535   Probability and Computing   CS15698   Graduate Reading and Research   CS15599   Probability and Research   CS15698   CS15698   Graduate Reading and Research   CS15599   CS15699   C   |  |
| CS15295   Competition Programming and Problem Solving   CS15296   Special Topic: Images of Computing   CS15296   Special Topic: Innovating for Underserved Communities: Field Research Basics   CS15652   Foundation Programming Languages   CS15302   Special Topic: Seminar on Innovating for Underserved Communities   CS15657   Constructive Logic   CS15312   Foundations of Programming Languages   CS15611   Interaction and Expression using the Pausch Bridge Lig   CS15313   Foundations of Software Engineering   CS15662   Computer Graphics   CS15314   Special Topic: Programming Language Semantics   CS15663   Computational Photography   CS15317   Constructive Logic   CS15664   Technical Animation   CS15319   Cloud Computing   CS15322   Introduction to Computer Music   CS15669   Masters Research   CS15669   Masters Research   CS15348   Embedded Systems   CS15669   Introduction to Computer and Network Security   CS15691   Productional Discrete Mathematics   CS15691   Practicum   CS15351   Algorithms and Advanced Data Structures   CS15694   Special Topic: Cognitive Robotics   CS15355   Modern Computer Algebra   CS15569   Fordauate Reading and Research   CS155699   Probability and Computing   CS15699   Graduate Reading and Research   CS155699   CS15699   CS1   |  |
| CS15296   Special Topic: Images of Computing   CS15320   Special Topic: Innovating for Underserved Communities: Field Research Basics   CS15657   Constructive Logic   CS15303   Special Topic: Seminar on Innovating for Underserved Communities   CS15659   Probability and Computing   CS15312   Foundations of Programming Languages   CS15661   Interaction and Expression using the Pausch Bridge Lig   CS15313   Foundations of Software Engineering   CS15662   Computer Graphics   CS15314   Special Topic: Programming Language Semantics   CS15663   Computer Graphics   CS15317   Constructive Logic   CS15319   Cloud Computing   CS15319   Cloud Computing   CS15322   Introduction to Computer Music   CS15348   Embedded Systems   CS15669   Masters Research   CS15349   Introduction to Computer and Network Security   CS15351   Algorithms and Advanced Data Structures   CS15351   Computational Discrete Mathematics   CS15691   Practicum   CS15355   Modern Computer Algebra   CS15695   Graduate Reading and Research   CS15359   C   |  |
| CS15302   Special Topic: Innovating for Underserved Communities: Field Research Basics   CS15657   Constructive Logic  |  |
| CS15303   Special Topic: Seminar on Innovating for Underserved Communities   CS15659   Probability and Computing     CS15312   Foundations of Programming Languages   CS15661   Interaction and Expression using the Pausch Bridge Lig     CS15313   Foundations of Software Engineering   CS15662   Computer Graphics     CS15314   Special Topic: Programming Language Semantics   CS15663   Computational Photography     CS15317   Constructive Logic   CS15664   Technical Animation     CS15319   Cloud Computing   CS15666   Computer Game Programming     CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15669   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15697   Graduate Reading and Research     CS15355   Modern Computer Algebra   CS15698   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15698   Graduate Reading and Research     CS15699   CS15699   CS15699   CS15699   CS15699   CS15699   CS15699     CS15699   CS   |  |
| CS15312   Foundations of Programming Languages   CS15313   Foundations of Software Engineering   CS15313   Foundations of Software Engineering   CS15362   Computer Graphics   |  |
| CS15313   Foundations of Software Engineering   CS15662   Computer Graphics     CS15314   Special Topic: Programming Language Semantics   CS15663   Computational Photography     CS15317   Constructive Logic   CS15664   Technical Animation     CS15319   Cloud Computing   CS15666   Computer Game Programming     CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15686   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15698   Graduate Reading and Research     CS15699   CS156   | htingThis Section Can                      |
| CS15314   Special Topic: Programming Language Semantics   CS15663   Computational Photography     CS15317   Constructive Logic   CS15664   Technical Animation     CS15319   Cloud Computing   CS15666   Computer Game Programming     CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15686   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15698   Graduate Reading and Research     CS15699   CS156   | LettingTills Section can                   |
| CS15317   Constructive Logic   CS15664   Technical Animation     CS15319   Cloud Computing   CS15666   Computer Game Programming     CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15686   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15691   CS15691   CS15698   Graduate Reading and Research     CS15691   CS15691   CS15698   CS15698   CS15698   CS15698     CS15691   CS15691   CS15698   CS1   |  |
| CS15319   Cloud Computing   CS15666   Computer Game Programming     CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15686   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15698   CS15698   CS15698   CS15698   CS15698     CS15698   CS15698   CS15698   CS15698   CS15698     CS15698   CS1569   |  |
| CS15322   Introduction to Computer Music   CS15669   Masters Research     CS15348   Embedded Systems   CS15686   Neural Computation     CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences     CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research     CS15698   Graduate Reading and Research     CS15699   CS15699   Graduate Reading and Research     CS15690   CS   |  |
| CS15349   Introduction to Computer and Network Security   CS15689   Independent Study in the Computer Sciences   CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum   CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics   CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research   CS15359   Probability and Computing   CS15698   Graduate Reading and Research   CS15698   CS16988   CS1698   |  |
| CS15351   Algorithms and Advanced Data Structures   CS15691   Practicum     CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics     CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research     CS15359   Probability and Computing   CS15698   Graduate Reading and Research   |  |
| CS15354   Computational Discrete Mathematics   CS15694   Special Topic: Cognitive Robotics   CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research   CS15359   Probability and Computing   CS15698   Graduate Reading and Research   CS15698   CS1698   CS16988   CS16   |  |
| CS15355   Modern Computer Algebra   CS15697   Graduate Reading and Research   CS15698   Graduate Reading and Research   CS15698   Graduate Reading and Research   CS15698   CS16988   CS   |  |
| CS15359   Probability and Computing   CS15698   Graduate Reading and Research  |  |
|  |  |
| CS15365   Experimental Animation   CS15712   Advanced Operating Systems and Distributed Systems  |  |
|  |  |
| CS15381   Artificial Intelligence: Representation and Problem Solving   CS15719   Advanced Cloud Computing   CS15740   Computer Architecture   |  |
| CS15383   Introduction to Text Processing   CS15740   Computer Architecture   CS15744   Computer Networks: Computer Networks   |  |
| CS15387   Computational Perception   CS15745   Optimizing Compilers for Modern Architectures   |  |
| CS15390   Entrepreneurship for Computer Science   CS15746   Storage Systems  |  |
| CS15410   Operating System Design and Implementation   CS15750   Graduate Algorithms   |  |
| CS15411   Compiler Design  |  |
| CS15412   Operating System Practicum   CS15781   Machine Learning  | İ  |
| CS15413   Software Engineering Practicum   CS15801   CS PhD Alternative Elective   | İ  |
| CS15415   Database Applications   CS15802   CSD PhD Elective   |  |
| CS15418   Parallel Computer Architecture and Programming   CS15803   CSD PhD Elective  | ĺ  |
| CS15421   Information Security and Privacy   CS15804   CSD PhD Elective  |  |
| CS15423   Special Topic: Digital Signal Processing for Computer Science   CS15812   Programming Language Semantics   |  |
| CS15424   Foundations of Cyber-Physical Systems   CS15814   Types and Programming Languages  |  |
| CS15437   Web Application Development   CS15815   Interactive Theorem Proving  |  |
| CS15440   Distributed Systems  | Jangallad                                  |
| CS15441   Computer Networks   CS15821   Mobile and Pervasive Computing   CS15451   Algorithm Design and Analysis   CS15826   Multimedia Databases and Datamining   | Cancelled                                  |
| CS15451   Algorithm Design and Analysis   CS15453   Formal Languages, Automata, and Computability   CS15453   CS15855   An Introduction to Computational Complexity Theory   | Cancelled                                  |
| CS15453   Formal Languages, Automata, and Computability   CS15454   Special Topic: Computational Automata Theory   CS15857   Performance Modeling: Analytical Performance Modeling   | Cancelled                                  |
| CS15454   Special Topic: Computational Automata Theory   CS15455   Undergraduate Complexity Theory   CS15859   Special Topics in Theory: Advanced Algorithms   | <br> <br>                                  |
| CS15455   Ondergraduate Complexity Theory   Advanced Algorithms   CS15862   Computational Photography  |  |
| CS15462   Computer Graphics   Computational Aspects of   |  |
| CS15463   Computational Photography   CS15887   Planning, Execution, and Learning: Planning, Execution   | of Computer Systems                        |

| CS15464 | Technical Animation                                    | CS15891 | V-Unit in Computer Science             |
|---------|--|---------|--|
| CS15466 | Computer Game Programming                              | CS15896 | Algorithms, Games, and Networks        |
| CS15491 | Special Topic: CMRoboBits: Creating Intelligent Robots | CS15990 | Computer Science Colloquium            |
| CS15494 | Special Topic: Cognitive Robotics                      | CS15996 | Immigration Course in Computer Science |
| CS15498 | Special Topic: Forensic Computer Science               | CS15997 | Graduate Reading and Research          |
| CS15513 | Introduction to Computer Systems                       | CS15998 | Practicum in Computer Science          |
| CS15591 | Independent Study in Computer Science                  |         |  |
|         |  |         |  |

Total 137 records, File: db/eecs/cmu/computer-science-cmu2015

| id       | title<br>+   | id       | title<br>+  |
|----------|--|----------|---|
| ISR08200 | Ethics and Policy Issues in Computing  | ISR08714 | Negotiation   |
| ISR08302 | Introduction to Network Science: Introduction to Network Science             | ISR08715 | ePayment ePayment   |
| ISR08532 | Law of Computer Technology   | ISR08716 | Practicum   |
| ISR08533 | Privacy, Policy, Law and Technology  | ISR08721 | eBusiness Disasters   |
| ISR08534 | Usable Privacy Security  | ISR08722 | Data Structures for Application Programmers: Data Structures for Applicati  |
| ISR08540 | Green Computing  | ISR08724 | Client-Side Web Technologies  |
| ISR08541 | Hardware and Software Systems for Smart Homes and Buildings: Hardware & amp  | ISR08730 | Independent Study   |
| ISR08600 | Java and J2EE Programming  | ISR08731 | Information Security & amp; Privacy   |
| ISR08602 | Current Topics In Privacy Seminar  | ISR08732 | Law of Computer Technology  |
| ISR08604 | Foundations of Privacy   | ISR08733 | Privacy, Policy, Law and Technology   |
| ISR08605 | Engineering Privacy in Software  | ISR08734 | Usable Privacy and Security   |
| ISR08606 | Privacy by Design Project Workshop: Privacy by Design Project Workshop       | ISR08741 | Seminar in Data ScienceThis Section Cancelled                               |
| ISR08607 | Privacy by Design Practicum: Privacy by Design Practicum                     | ISR08742 | Data Science Analytics Capstone Independent Study Process & amp; OutcomesTh |
| ISR08608 | Privacy Engineering Independent Study: Privacy Engineering Independent Study | ISR08744 | VLIS Capstone Independent Study OutcomesThis Section Cancelled              |
| ISR08622 | Introduction to Network Science: Introduction to Network Science             | ISR08745 | MCDS Independent StudyThis Section Cancelled                                |
| ISR08624 | Influence and Persuasion Online  | ISR08749 | Data Science Systems Capstone: PracticumThis Section Cancelled              |
| ISR08630 | Ethics and Policy Issues in Computing: Ethics and Policy Issues in Computing | ISR08761 | Information Security and Privacy  |
| ISR08632 | Law of Computer Technology   | ISR08763 | Introduction to Human Computer Interaction for Technology Executives        |
| ISR08640 | Dynamic Network Analysis   | ISR08765 | Innovation Ecosystems   |
| ISR08700 | Ubiquitous Computing   | ISR08766 | Mobile and Pervasive Computing Services                                     |
| ISR08701 | Requirements Elicitation and Analysis  | ISR08767 | Mobile Pervasive Computing Project  |
| ISR08702 | Contextual Design  | ISR08769 | Mobile Pervasive Computing Project  |
| ISR08703 | User Interface Design and Testing  | ISR08781 | Mobile and Pervasive Computing Services                                     |
| ISR08704 | Software Design  | ISR08801 | Dynamic Network Analysis  |
| ISR08705 | Network Infrastructure and Wireless, PONs                                    | ISR08803 | Empirical Methods for Socio-Technical Research                              |
| ISR08706 | Web Services   | ISR08805 | Engineering Privacy in Software   |
| ISR08707 | Web Application Development  | ISR08840 | Green Computing   |
| ISR08708 | ERP Supply Chain   | ISR08841 | Hardware and Software Systems for Smart Homes and BuildingsThis Section Ca  |
| ISR08709 | Privacy Technology   | ISR08995 | COS Internship  |
| ISR08710 | Search Engines, Portals  | ISR08996 | COS Independent Study   |
| ISR08711 | Data Mining, CRM   | ISR08997 | COS Graduate Reading and Research   |
| ISR08712 | Information Security   | ISR08998 | COS Practicum - The Practice of Science                                     |
| ISR08713 | Mobile Commerce  | ISR08999 | COS Practicm-Methodology  |

Total 66 records, File: db/eecs/cmu/institute-for-software-research-cmu2015

| ++              | ·  | +              | +  |
|-----------------|--|----------------|--|
| id              | title  | id             | title  |
| ++<br> LTI11344 | Machine Learning in Practice                   | +<br> LTI11727 | +  |
| LTI11344        |  | LTI11727       | Advanced Seminar in SemanticsThis Section Cancelled                        |
| LTI11390        |  | LTI11729       | Semantics Lab  |
| LTI11411        |  | LTI11731       | Machine Translation  |
| LTI11441        |  | LTI11732       | Self-Paced Lab: MT   |
| LTI11442        |  | LTI11733       | Multilingual Speech-to-Speech Translation Lab                              |
| LTI11443        |  | LTI11734       | Advanced Machine Translation SeminarThis Section Cancelled                 |
| LTI11465        |  | LTI11736       | Graduate Seminar on Endangered Languages                                   |
| LTI11490        |  | LTI11741       | Machine Learning for Text Mining   |
| LTI11492        |  | LTI11742       | Self-paced Lab: IR   |
| LTI11590        | <del>-</del>                                   | LTI11743       | Self-Paced Lab: IR   |
| LTI11601        |  | LTI11745       | Advanced Statistical Learning Seminar                                      |
| LTI11611        |  | LTI11751       | Speech Recognition and Understanding                                       |
| LTI11630        |  | LTI11752       | Speech II: Phonetics, Prosody, Perception and SynthesisThis Section Cancel |
| LTI11631        |  | LTI11753       | Advanced Laboratory in Speech Recognition                                  |
| LTI11632        |  | LTI11754       | Project Course: Dialogue Systems   |
| LTI11633        | MCDS Independent Study: MCDS Independent Study | LTI11755       | Machine Learning for Signal Processing                                     |
| LTI11634        |  | LTI11756       | Design and Implementation of Speech Recognition Systems                    |
| LTI11641        |  | LTI11757       | Advanced Topics: Statistical Modeling for Spoken Dialog Systems            |
| LTI11642        |  | LTI11761       | Language and Statistics  |
| LTI11643        | Machine Learning for Text Analysis             | LTI11775       | Large-Scale Multi-media Analysis   |
| LTI11661        |  | LTI11782       | Self-Paced Lab for Computational Biology                                   |
| LTI11663        |  | LTI11783       | Self-Paced Lab: Rich Interaction in Virtual World                          |
| LTI11675        |  | LTI11785       | Lab Course on Deep Learning  |
| LTI11676        | Big Data AnalyticsThis Section Cancelled       | LTI11791       | Design & Engineering of Intelligent Information Systems                    |
| LTI11690        | MIIS Directed Study                            | LTI11792       | Intelligent Information Systems Project                                    |
| LTI11693        | Software Method for Biotechnology              | LTI11796       | Question Answering Lab   |
| LTI11695        | Competitive Engineering                        | LTI11797       | Question Answering   |
| LTI11696        | MIIS Capstone Planning Seminar                 | LTI11805       | Machine Learning with Large Datasets                                       |
| LTI11699        | MSBIC Program Capstone                         | LTI11821       | Advanced Linguistics Seminar   |
| LTI11700        | LTI Colloquium                                 | LTI11823       | ConLanging: Lrng. Ling. & Lang Tech via Constru Artif. Lang.               |
| LTI11711        | Algorithms for NLP                             | LTI11899       | Summarization of Documents and Interaction                                 |
| LTI11712        | Lab in NLP                                     | LTI11910       | Directed Research  |
| LTI11713        | Advanced NLP Seminar                           | LTI11920       | Independent Study: Breadth   |
| LTI11714        | Tools for NLP                                  | LTI11925       | Independent Study: Area  |
| LTI11716        | Graduate Seminar on Dialog Processing          | LTI11927       | MIIS Capstone Project  |
| LTI11719        |  | LTI11928       | Masters Thesis I   |
| LTI11721        | Grammars and Lexicons                          | LTI11929       | Masters Thesis II  |
| LTI11723        | Linguistics Lab                                | LTI11930       | Dissertation Research  |
| LTI11726        | Meaning in Language Lab (Self Paced)           | LTI11935       | LTI Practicum  |
| ++              |  | +              | +  |

Total 80 records, File: db/eecs/cmu/language-technologies-institute-cmu2015

| +        | title                                | +        | title                                     |
|----------|--------------------------------------|----------|---|
| MLG10500 | Senior Research Project              | MLG10708 | Probabilistic Graphical Models            |
| MLG10601 | Introduction to Machine Learning     | MLG10715 | Advanced Introduction to Machine Learning |
| MLG10605 | Machine Learning with Large Datasets | MLG10725 | Convex Optimization                       |
| MLG10611 | MS Data Analysis Project             | MLG10805 | Machine Learning with Large Datasets      |
| MLG10620 | Independent Study: Research          | MLG10910 | Directed Research                         |
| MLG10697 | Reading and Research                 | MLG10915 | MLD Journal Club                          |
| MLG10701 | Introduction to Machine Learning     | MLG10920 | Graduate Reading and Research             |
| MLG10702 | Statistical Machine Learning         | MLG10930 | Dissertation Research                     |
| MLG10704 | Information Processing and Learning  | MLG10935 | Practicum                                 |
| MLG10705 | Intermediate Statistics              | MLG10940 | Independent Study                         |

| id       | topic   | id       | topic  |
|----------|---|----------|--|
| ROB16223 | Introduction to Physical Computing                  | ROB16698 | MRSD Business Seminar II   |
| ROB16264 | Humanoids   | ROB16711 | Kinematics, Dynamic Systems and Control                                    |
| ROB16299 | Introduction to Feedback Control Systems            | ROB16720 | Computer Vision: Computer Vision   |
| ROB16311 | Introduction to Robotics                            | ROB16722 | Sensing and Sensors  |
| ROB16362 | Mobile Robot Programming Laboratory                 | ROB16725 | Methods in Medical Image Analysis  |
| ROB16384 | Robot Kinematics and Dynamics                       | ROB16741 | Mechanics of Manipulation  |
| ROB16385 | Computer Vision                                     | ROB16745 | Dynamic Optimization   |
| ROB16397 | Art, Conflict and Technology in Northern Ireland    | ROB16761 | Mobile Robots: Mobile Robots   |
| ROB16450 | Robotics Systems Engineering                        | ROB16764 | Ethnography: Analyzing How Context Affects Technology UseThis Section Canc |
| ROB16455 | Human-Machine Virtuosity                            | ROB16778 | Mechatronic Design   |
| ROB16465 | Game Engine Programming                             | ROB16811 | Mathematical Fundamentals for Robotics                                     |
| ROB16467 | Human Robot Interaction                             | ROB16822 | Geometry-based Methods in Vision: Geometry-based Methods in Vision         |
| ROB16474 | Robotics Capstone                                   | ROB16824 | Visual Learning and Recognition: VISUAL LEARNING & amp; RECOGNITION        |
| ROB16597 | Undergraduate Reading and Research                  | ROB16831 | Statistical Techniques in Robotics   |
| ROB16610 | MS-RT Year One Program Fundamentals of Robotics I   | ROB16843 | Manipulation Algorithms  |
| ROB16611 | MS-RT Year One Program Fundamentals of Robotics II  | ROB16850 | Systems Engineering  |
| ROB16612 | MS-RT Year One Program Fundamentals of Robotics III | ROB16861 | Mobile Robot Design  |
| ROB16613 | MS-RT Year 1 Program Fundamentals of Robotics IV    | ROB16865 | Advanced Mobile Robot Development  |
| ROB16614 | MS-RT Extended Project Course Sequence (EPCS)       | ROB16867 | Human Robot Interaction  |
| ROB16615 | MS-RT Supervised Studies in Robotics                | ROB16868 | Biomechanics & amp; Motor Control  |
| ROB16642 | Manipulation, Mobility, and Control                 | ROB16897 | Seminar on Robotics  |
| ROB16650 | Systems Engineering and Management for Robotics     | ROB16899 | Special Topics: Actuation and Sensing Mechanisms: BIG DATA APPROACHES IN C |
| ROB16662 | Robot Autonomy                                      | ROB16990 | Practicum  |
| ROB16681 | MRSD Project 1                                      | ROB16991 | Internship   |
| ROB16682 | MRSD Project II                                     | ROB16995 | Independent Study  |
| ROB16697 | MRSD Business Seminar 1                             | ROB16997 | Reading and Research in Robotics   |

Total 52 records, File: db/eecs/cmu/robotics-cmu2015

| +      | +topic  |         | topic   |
|--------|---|---------|---|
| 10-701 | Machine Learning (CS 15-781)                    | 16-735  | Robotic Motion Planning   |
| 15-381 | Artificial Intelligence                         | 16-741  | Mechanics of Manipulation   |
| 15-462 | Computer Graphics I (CS)                        | 16-745  | Dynamic Optimization  |
| 15-780 | Graduate Artificial Intelligence (CS)           | 16-761  | Introduction to Mobile Robots   |
| 15-862 | Computational Photography (CS)                  | 16-764  | Ethnography   |
| 15-883 | Computational Models of Neural Systems (CS)     | 16-778  | Mechatronic Design (also ECE 18-578)  |
| 15-887 | Planning, Execution and Learning                | 16-811  | Mathematical Fundamentals for Robotics  |
| 16-250 | Gadgetry  | 16-822  | Geometry-based Methods in Vision  |
| 16-299 | Introduction to Feedback Control Systems        | 16-823  | Physics based Methods in Computer Vision                                      |
| 16-311 | Introduction to Robotics                        | 16-824  | Physics-based Methods in Vision   |
| 16-362 | Mobile Robot Programming Laboratory             | 16-831  | Statistical Techniques in Robotics  |
| 16-384 | Robot Kinematics and Dynamics (CS)              | 16-843  | Manipulation Algorithms   |
| 16-385 | Computer Vision                                 | 16-850  | Systems Engineering   |
| 16-421 | Vision Sensors                                  | 16-861  | Mobile Robot Design   |
| 16-467 | Human-Robot Interaction                         | 16-865  | Advanced Mobile Robot Development   |
| 16-597 | Undergraduate Reading and Research              | 16-867  | Human-Robot Interaction   |
| 16-642 | Manipulation, Mobility & Control                | 16-868  | Biomechanics and Motor Control  |
| 16-650 | Systems Engineering and Management for Robotics | 16-871  | Technology for Developing Communities   |
| 16-681 | MRSD Project I                                  | 16-899A | Differential Geometry   |
| 16-697 | MRSD Business Seminar I                         | 16-899B | Physics Inspired Techniques in Robotics, Computer Science, & Machine Learning |
| 16-711 | Kinematics, Dynamic Systems and Control         | 16-899C | Adaptive Control and Reinforcement Learning                                   |
| 16-720 | Computer Vision                                 | 16-899E | Robot Ethics  |
| 16-722 | Sensing and Sensors                             | 16-995  | Independent Study   |
| 16-725 | Methods in Medical Image Analysis               | 16-997  | Reading and Research  |

| ++<br>  id | title   | +id             | +   |
|------------|---|-----------------|---|
| ++<br> CS2 | Digital Platforms   | CS262           | Introduction to Distributed Computing                               |
| CS20       | Discrete Mathematics for Computer Science                   | CS265           | Big Data Systems  |
| CS50       | Introduction to Computer Science I                          | CS277           | Geometric Modeling in Computer Graphics                             |
| CS50       | Introduction to Computer Science I                          | CS278           | Rendering and Image Processing in Computer Graphics                 |
| CS51       | Introduction to Computer Science II                         | CS279           | Research Topics in Human-Computer Interaction                       |
| CS61       | Systems Programming and Machine Organization                | cs280r          | Advanced Topics in Artificial Intelligence                          |
| CS90na     | The Internet: Governance and Power                          | CS281           | Advanced Machine Learning   |
| CS91r      | Supervised Reading and Research                             | CS282r          | Decision-Making Under Uncertainty - (New Course)                    |
| CS96       | System Design Projects                                      | CS283           | Computer Vision   |
| CS109      | Data Science  | CS284r          | Topics on Computation in Networks and Crowds                        |
| CS121      | Introduction to the Theory of Computation                   | CS285           | Multi-Agent Systems   |
| CS124      | Data Structures and Algorithms                              | CS286r          | Topics at the Interface between Computer Science and Economics      |
| CS125      | Algorithms and Complexity - (New Course)                    | CS287r          | Topics in Computational Linguistics and Natural Language Processing |
| CS127      | Introduction to Cryptography                                | CS288r          | Advanced Topics in Computer Vision                                  |
| CS141      | Computing Hardware  | CS289           | Biologically-inspired Multi-agent Systems                           |
| CS143      | Computer Networks   | cs299r          | Special Topics in Computer Science                                  |
| CS144r     | Networks Design Projects                                    | cs305,306       | Readable, Extensible, High-Performance Software Systems             |
| CS146      | Computer Architecture                                       | cs307,308       | Biologically-Inspired Multi-Agent Systems, Distributed Systems, and |
| CS148      | Design of VLSI Circuits and Systems                         | cs309,310       | Computational Mechanism Design, Electronic Marketplaces, and Multi  |
| CS152      | Programming Languages                                       | CS311,312       | Collaborative Systems, AI Planning, and Natural Language Processing |
| CS153      | Compilers   | CS313,314       | Visual Computing  |
| CS161      | Operating Systems   | cs315,316       | Social Computing: Computation and Economics                         |
| CS164      | Software Engineering  | cs319,320       | Data Systems Design - (New Course)                                  |
| CS165      | Data Systems  | cs321,322       | Databases, Operating System, and Software Design                    |
| cs171      | Visualization   | cs323,324       | Human-Computer Communication through Natural, Graphical, and Artifi |
| CS175      | Computer Graphics   | cs325,326       | Intelligent Interactive Systems and Human-Computer                  |
| CS179      | Design of Usable Interactive Systems                        | CS327,328       | Mathematical Logic, Theory of Computation                           |
| CS181      | Machine Learning  | CS343,344       | Computer Architecture: Modeling and Design                          |
| CS182      | Intelligent Machines: Reasoning, Actions, and Plans         | CS345,346       | High-Performance Computer Systems                                   |
| CS186      | Economics and Computation                                   | cs347,348       | Computer Vision   |
| CS187      | Computational Linguistics                                   | cs351,352       | Cryptography: Unbreakable Codes and Financial Cryptography          |
| CS189r     | Autonomous Multi-Robot Systems                              | cs355,356       | Computational Complexity, Parallel Computation, Computational Learn |
| CS207      | Systems Development for Computational Science               | cs357,358       | Computational Complexity, Cryptography, and Pseudorandomness        |
| CS221      | Computational Complexity                                    | cs359,360       | On-line Algorithms and Randomized Algorithms                        |
| CS222      | Algorithms at the Ends of the Wire                          | cs361,362       | Programming Languages and Semantics                                 |
| CS223      | Probabilistic Analysis and Algorithms                       | CS363,364       | Programming Languages and Security                                  |
| CS224      | Advanced Algorithms - (New Course)                          | CS365           | SEAS Teaching Practicum   |
| CS225      | Pseudorandomness  | CS375,376       | Computer Graphics   |
| CS227r     | Topics in Cryptography and Privacy                          | CS377,378       | Sketching Algorithms for Massive Data                               |
| CS228      | Computational Learning Theory                               | CS379,380       | Algorithms for Social Data  |
| CS229r     | Topics in the Theory of Computation: Biology and Complexity | CS1             | Great Ideas in Computer Science                                     |
| CS244r     | Networks Design Projects                                    | CS105           | Privacy and Technology  |
| CS246      | Advanced Computer Architecture                              | CS205           | Computing Foundations for Computational Science                     |
| CS247r     | Advanced Topics in Computer Architecture                    | CS303,304       | Statistical Machine Learning  |
| CS248      | Advanced Design of VLSI Circuits and Systems                | Linguistics 287 | Topics in Computational Linguistics and Natural Language Processing |
| CS250      | Software Foundations - (New Course)                         | MCB 131         | Computational Neuroscience  |
| CS252r     | Advanced Topics in Programming Languages                    | Statistics 221  | Statistical Computing and Learning                                  |
| CS260r     | Projects and Close Readings in Software Systems             | Statistics 385  | Statistical Machine Learning  |
| CS261      | Research Topics in Operating Systems                        | İ               |   |
| ·+         |   |                 | ·<br>+  |

Total 97 records, File: db/eecs/computer-science-harvard2015

| id      | title   | id<br>  | title  |
|---------|---|---------|--|
| COS126  | General Computer Science  | COS342  | Introduction to Graph Theory   |
| COS217  | Introduction to Programming Systems   | COS314  | Computer and Electronic Music  |
| COS226  | Algorithms and Data Structures  | COS401  | Introduction to Machine Translation  |
| COS320  | Compiling Techniques  | COS351  | Information Technology and Public Policy                                     |
| COS333  | Advanced Programming Techniques   | COS109  | Computers in Our World   |
| COS340  | Reasoning about Computation   | COS318  | Operating Systems  |
| COS398  | Junior Independent Work   | COS326  | Functional Programming   |
| COS423  | Theory of Algorithms  | COS375  | Computer Architecture and Organization                                       |
| COS424  | Interacting with Data   | COS397  | Junior Independent Work  |
| COS426  | Computer Graphics   | COS402  | Artificial Intelligence  |
| COS432  | Information Security  | COS429  | Computer Vision  |
| COS435  | Info Retrieval, Discovery, Delivery   | COS487  | Theory of Computation  |
| COS448  | Innovating Across Tech, Bus, Mkts   | COS497  | Senior Independent Work  |
| COS461  | Computer Networks   | COS521  | Advanced Algorithm Design  |
| COS488  | Introduction to Analytic Combinatorics  | COS526  | Advanced Computer Graphics   |
| COS495  | Special Topics in Computer Science: Information Technology, Law and Policy    | COS528  | Data Structures Graph Algorithms   |
| COS498  | Senior Independent Work   | COS551  | Intro. to Genomics and Computation   |
| COS510  | Programming Languages   | COS561  | Advanced Computer Networks   |
| COS511  | Theoretical Machine Learning  | COS597A | Adv. Topics in Computer Science: Algorithmic Mechanism Design                |
| COS583  | Great Moments in Computing  | COS597B | Adv. Topics in Computer Science: Topics in Algorithms                        |
| COS590  | Extramural Research Internship  | COS597C | Advanced Topics in Computer Science: Shape Analysis                          |
| COS598A | Advanced Topics in Computer Science: Shape Analysis                           | COS597D | Advanced Topics in Computer Science: Data Driven Statistical Genomics        |
| COS598B | Advanced Topics in Computer Science: The Unreasonable Effectiveness of Big    | COS597E | Advanced Topics in Computer Science: Bitcoin and cryptocurrency technologies |
| COS598C | Advanced Topics in Computer Science: Neural networks: theory and applications | COS306  | Contemporary Logic Design  |
| COS598D | Advanced Topics in Computer Science: Overcoming computational intractabilit   | COS381  | Networks: Friends, Money and Bytes   |
| COS598E | Advanced Topics in Computer Science: Reasoning about Networks                 | COS462  | Design of Very Large-Scale Integrated (V                                     |
| COS598F | Advanced Topics in Computer Science: Internet Law and Policy                  | COS231  | Integ/Quantitative Intro to Nat Sci I  |
| COS598G | Advanced Topics in Computer Science: Analytics and Systems of Big Data        | COS232  | Integ/Quantitative Intro to Nat Sci I  |
| COS475  | Computer Architecture   | COS236  | Integ/Quantitative Intro to Nat Sci IV                                       |
| COS233  | Integ/Quantitative Intro to Nat Sci II  | COS323  | Computing and Optimization   |
| COS234  | Integ/Quantitative Intro to Nat Sci II  | COS455  | Genomics Computational Mol Bio   |
| COS235  | Integ/Quantitative Biochem and Neurosci                                       |         |  |

Total 63 records, File: db/eecs/computer-science-14-15-princeton2015

| id         | title   | id      | title  |
|------------|---|---------|--|
| <br>ELE432 | Information Security  | ELE342  | Principles of Quantum Engineering  |
| ELE583     | Great Moments in Computing  | ELE351  | Electromagnetic Field Theory and Optics                                      |
| ELE491     | High-Tech Entrepreneurship  | ELE381  | Networks: Friends, Money and Bytes   |
| ELE201     | Information Signals   | ELE397  | Junior Independent Work  |
| ELE208     | Electronic and Photonic Devices   | ELE431  | Solar Energy Conversion  |
| ELE298     | Sophomore Independent Work  | ELE441  | Solid State Physics I  |
| ELE302     | Building Real Systems   | ELE453  | Optical Electronics  |
| ELE304     | Electronic Circuits: Devices to IC  | ELE461  | Design with Nanotechnologies   |
| ELE341     | Solid-State Devices   | ELE462  | Design of Very Large-Scale Integrated (V                                     |
| ELE352     | Physical Optics   | ELE465  | Switching and Sequential Systems   |
| ELE386     | Cyber Security  | ELE476  | Designing Secure Systems   |
| ELE396     | Introduction to Quantum Computing   | ELE482  | Digital Signal Processing  |
| ELE398     | Junior Independent Work   | ELE486  | Transmission and Compression Information                                     |
| ELE442     | Solid State Physics II  | ELE497  | Senior Independent Work  |
| ELE454     | Photonics Light Wave Communications   | ELE511  | Quantum Mechanics with Applications  |
| ELE456     | Quantum Optics  | ELE514  | Extramural Research Internship   |
| ELE475     | Computer Architecture   | ELE521  | Linear System Theory   |
| ELE488     | Image Processing  | ELE526  | Digital Communications and Systems   |
| ELE498     | Senior Independent Work   | ELE538  | Special Topics in Information: Multiuser Information Theory                  |
| ELE541     | Electronic Materials  | ELE538B | Special Topics in Information Sciences: Quantum Information Theory           |
| ELE547B    | Selected Tpcs in Solid-State Electronics: Subwavelength Nanophotonics and P |         | Organic Material/Photonics Electronics                                       |
| ELE548     | Selected Tpcs in Solid-State Electronics: Physics Technology of Low-Dimens  | ELE545  | Electronic Devices   |
| ELE555     | Selected Topics in Optics and Optical El                                    | ELE547A | Selected Tpcs in Solid-State Electronics: Advanced Topics in Electronic and  |
| ELE561     | Fundamentals of Nanophotonics   | ELE553  | Nonlinear Optics   |
| ELE529     | Coding Theory and Random Graphs   | ELE568  | Implementations of Quantum Information                                       |
| ELE375     | Computer Architecture and Organization                                      | ELE575  | Parallel Computation   |
| ELE203     | Electronic Circuit Design   | ELE580  | Advanced Topics in Computer Engineering: Trustworthy Computing               |
| ELE206     | Contemporary Logic Design   | ELE580A | Advanced Topics in Computer Engineering: RF and High-speed Circuits and Sys  |
| ELE297     | Sophomore Independent Work  | ELE580B | Advanced Topics in Computer Engineering: Kernel Methods for Machine Learning |
| ELE301     | Designing Real Systems  | ELE597  | Electrical Engineering Master's Project                                      |

| id<br>       | topic<br>+   | id                                | topic   |
|--------------|--|-----------------------------------|---|
| cambridge-1  | Critical Coding for Digital Humanities   | cambridge-67                      | Digital Signal Processing   |
| cambridge-2  | Computer Security: Principles and Foundations  | cambridge-68                      | Unix Tools  |
| cambridge-3  | Software Engineering   | cambridge-69                      | Security II   |
| cambridge-4  | Computer Security: Current Applications and Research                                     | cambridge-70                      | Security I  |
| cambridge-5  | Economics, Law and Ethics  | cambridge-71                      | Business Studies  |
| cambridge-6  | Concurrent and Distributed Systems   | cambridge-72                      | E-Commerce  |
| cambridge-7  | Flows in Networks  | cambridge-73                      | Business Studies Seminars   |
| cambridge-8  | Advanced Graphics  | cambridge-74                      | Group Project   |
| cambridge-9  | Computer Security: Principles and Foundations  | cambridge-75                      | Operating Systems   |
| cambridge-10 | Further Java   | cambridge-76                      | Bioinformatics  |
| cambridge-11 | Programming in Java  | cambridge-77                      | Biomedical Information Processing                                 |
| cambridge-12 | Prolog   | cambridge-78                      | Programming in C and C++  |
| cambridge-13 | Research Skills  | cambridge-79                      | Advanced Functional Programming                                   |
| cambridge-14 | Computer Security: Current Applications and Research                                     | cambridge-80                      | Social and Technological Network Analysis                         |
| cambridge-15 | Further Java Briefing  | cambridge=81                      | Mobile and Sensor Systems   |
| cambridge-16 | Human-Computer Interaction   | cambridge=82                      | Advanced Computer Design  |
| cambridge=10 | Research Skills  | cambridge-83                      | Advanced Computer Design<br>  Computer Design                     |
| cambridge-17 | Research Skills<br>  Theories of Interaction and Socio-digital Design                    | cambridge=84                      | COMputer Design<br>  ECAD and Architecture Practical Classes      |
| cambridge-19 | Theories of interaction and socio-digital besign<br>  Usability of Programming Languages | cambridge-85                      | Building an Internet Router                                       |
| cambridge-19 | Osability of Programming Languages<br>  Critical Coding for Digital Humanities           | cambridge=86                      | Building an internet Router<br>  Computer Networking              |
|              |  | cambridge=86  <br> cambridge=87   |   |
| cambridge-21 | Software and Interface Design  |                                   | Chip Multiprocessors<br>  ECAD and Architecture Practical Classes |
| cambridge-22 | Introduction to Natural Language Syntax and Parsing                                      | cambridge-88                      |   |
| cambridge-23 | Advanced Syntax and Semantics of Natural Language  | cambridge-89                      | Comparative Architectures   |
| cambridge-24 | Machine Learning for Language Processing   | cambridge-90                      | Modern Compiler Design  |
| cambridge-25 | Spoken Language Processing   | cambridge-91                      | Optimising Compilers  |
| cambridge-26 | Modern Compiler Design   | cambridge-92                      | Advanced Functional Programming                                   |
| cambridge-27 | Introduction to Natural Language Syntax and Parsing                                      | cambridge-93                      | Concepts in Programming Languages                                 |
| cambridge-28 | Advanced Syntax and Semantics of Natural Language  | cambridge-94                      | Types   |
| cambridge-29 | Natural Language Processing  | cambridge-95                      | Foundations of Computer Science                                   |
| cambridge-30 | Overview of Natural Language Processing  | cambridge-96                      | ML Practical Classes  |
| cambridge-31 | Research Skills  | cambridge-97                      | Interactive Formal Verification                                   |
| cambridge-32 | Language and Concepts  | cambridge-98                      | Logic and Proof   |
| cambridge-33 | Information Theory and Coding  | cambridge-99                      | Category Theory and Logic   |
| cambridge-34 | Mathematical Methods for Computer Science  | cambridge-100                     | Discrete Mathematics  |
| cambridge-35 | Computer Vision  | cambridge-101                     | Computation Theory  |
| cambridge-36 | Quantum Computing  | cambridge-102                     | Further Java  |
| cambridge-37 | Complexity Theory  | cambridge-103                     | Programming in Java   |
| cambridge-38 | Sensor Fusion and Location Aware Computing   | cambridge-104                     | Prolog  |
| cambridge-39 | Discrete Mathematics   | cambridge-105                     | Computer Graphics and Image Processing                            |
| cambridge-40 | Advanced Topics in Denotational Semantics  | cambridge-106                     | Research Skills   |
| cambridge-41 | Denotational Semantics   | cambridge=107                     | Algorithms  |
| cambridge-42 | Spoken Language Processing   | cambridge=108                     | Advanced Algorithms   |
| cambridge-43 | Machine Learning for Language Processing   | cambridge-109                     | Multicore Semantics and Programming                               |
| cambridge-44 | Computer Systems Modelling   | cambridge-110                     | Semantics of Programming Languages                                |
| cambridge-45 | Mathematical Methods for Computer Science  | cambridge-111                     | Computer Security: Principles and Foundations                     |
| cambridge-46 | Flows in Networks  | cambridge-112                     | Algorithms  |
| cambridge-47 | Hoare Logic  | cambridge-113                     | Computer Security: Current Applications and Research              |
| cambridge-48 | Temporal Logic and Model Checking  | cambridge-114                     | Security II   |
| cambridge-49 | System on Chip Design and Modelling  | cambridge-115                     | Lexical Semantics   |
| cambridge-50 | System-on-Chip Design  | cambridge=116                     | Overview of Natural Language Processing                           |
| cambridge-50 | Numerical Methods  | cambridge=117                     | Discourse Processing  |
| cambridge-51 | Algebraic Path Problems, with applications to Internet Routing                           | cambridge=117                     | Information Retrieval   |
| cambridge-52 | Compiler Construction  | cambridge=118                     | Information Retrieval<br>  Artificial Intelligence II             |
| cambridge-53 | Databases  | cambridge=119  <br> cambridge=120 | Artificial Intelligence if<br>  Digital Electronics               |
| cambridge-54 | Databases<br>  Computer Fundamentals   | cambridge=121                     | Digital Electronics<br>  Hardware Practical Classes               |
|              | ! =  |                                   |   |
| cambridge-56 | Object-Oriented Programming  | cambridge=122                     | Low Power Embedded Systems Programming                            |
| cambridge-57 | Registration   | cambridge-123                     | Computer Security: Principles and Foundations                     |
| cambridge-58 | Sensor Fusion and Location Aware Computing   | cambridge-124                     | Concurrent and Distributed Systems                                |
| cambridge-59 | Topical Issues   | cambridge-125                     | Advanced Operating Systems  |
| cambridge-60 | Multicore Semantics and Programming  | cambridge-126                     | Computer Security: Current Applications and Research              |
| cambridge-61 | Topics in Concurrency  | cambridge-127                     | Advanced Functional Programming                                   |

| cambridge-62 | Artificial Intelligence I                 | cambridge-128 | A Mathematical Theory of Distributed Games and Strategies |
|--------------|---|---------------|---|
| cambridge-63 | Automated Reasoning                       | cambridge-129 | Spoken Language Processing                                |
| cambridge-64 | Low Power Embedded Systems Programming    | cambridge-130 | Advanced Functional Programming                           |
| cambridge-65 | Advanced Topics in Denotational Semantics | cambridge-131 | Data Centric Systems and Networking                       |
| cambridge-66 | Biomedical Information Processing         |               |   |
|              |   |               |   |

Total 131 records, File: db/eecs/eecs-cambridge2015

| id        | topic                                     | id        | topic   |
|-----------|---|-----------|---|
| oxford-1  | Advanced Data Structures and Algorithms   | oxford-27 | Functional Programming                          |
| oxford-2  | Advanced Security                         | oxford-28 | Geometric Modelling                             |
| oxford-3  | Automata, Logic and Games                 | oxford-29 | Group Design Practical                          |
| oxford-4  | Categorical Quantum Mechanics             | oxford-30 | Imperative Programming I                        |
| oxford-5  | Categories, Proofs and Processes          | oxford-31 | Imperative Programming II                       |
| oxford-6  | Compilers                                 | oxford-32 | Integer Programming                             |
| oxford-7  | Computational Complexity                  | oxford-33 | Intelligent Systems                             |
| oxford-8  | Computational Learning Theory             | oxford-34 | Introduction to Formal Proof                    |
| oxford-9  | Computational Linguistics                 | oxford-35 | Knowledge Representation & Reasoning            |
| oxford-10 | Computer Animation                        | oxford-36 | Lambda Calculus and Types                       |
| oxford-11 | Computer Architecture                     | oxford-37 | Linear Algebra                                  |
| oxford-12 | Computer Graphics                         | oxford-38 | Logic and Proof                                 |
| oxford-13 | Computer Networks                         | oxford-39 | Machine Learning                                |
| oxford-14 | Computer Security                         | oxford-40 | Models of Computation                           |
| oxford-15 | Computer-Aided Formal Verification        | oxford-41 | Numerical Solution of Differential Equations I  |
| oxford-16 | Computers in Society                      | oxford-42 | Numerical Solution of Differential Equations II |
| oxford-17 | Concurrency                               | oxford-43 | Object Oriented Programming                     |
| oxford-18 | Concurrent Algorithms and Data Structures | oxford-44 | Principles of Programming Languages             |
| oxford-19 | Concurrent Programming                    | oxford-45 | Probabilistic Model Checking                    |
| oxford-20 | Continuous Mathematics                    | oxford-46 | Probability and Computing                       |
| oxford-21 | Database Systems Implementation           | oxford-47 | Quantum Computer Science                        |
| oxford-22 | Databases                                 | oxford-48 | Requirements                                    |
| oxford-23 | Design and Analysis of Algorithms         | oxford-49 | Software Verification                           |
| oxford-24 | Digital Systems                           | oxford-50 | Theory of Data and Knowledge Bases              |
| oxford-25 | Discrete Mathematics                      | oxford-51 | Visual Analytics                                |
| oxford-26 | Foundations of Computer Science           |           |   |

Total 51 records, File: db/eecs/eecs-oxford2015

| id         | title   | id          | title   |
|------------|---|-------------|---|
| COMSCI1    | Freshman Computer Science Seminar                                     | COMSCI264A  | +   |
| COMSCI111  | Operating Systems Principles  | COMSCI269   | Seminar: Current Topics in Artificial Intelligence                      |
| COMSCI112  | Modeling Uncertainty in Information Systems                           | COMSCI275   | Artificial Life for Computer Graphics and Vision                        |
| COMSCI118  | Computer Network Fundamentals   | COMSCI289A  | Current Topics in Computer Theory                                       |
| COMSCI130  | Software Engineering  | COMSCI289CO | Current Topics in Computer Theory: Complexity Theory                    |
| COMSCI131  | Programming Languages   | COMSCI298   | Research Seminar: Computer Science                                      |
| COMSCI132  | Compiler Construction   | COMSCI31    | Introduction to Computer Science I                                      |
| COMSCI133  | Parallel and Distributed Computing                                    | COMSCI32    | Introduction to Computer Science II                                     |
| COMSCI136  | Introduction to Computer Security                                     | COMSCI33    | Introduction to Computer Organization                                   |
| COMSCI143  | Database Systems  | COMSCI35L   | Software Construction Laboratory  |
| COMSCI144  | Web Applications  | COMSCI375   | Teaching Apprentice Practicum   |
| COMSCI145  | Introduction to Data Mining   | COMSCI495   | Teaching Assistant Training Seminar                                     |
| COMSCI152B | Digital Design Project Laboratory                                     | COMSCIC137A | Prototyping Programming Languages                                       |
| COMSCI161  | Fundamentals of Artificial Intelligence                               | COMSCIC137B | Programming Language Design   |
| COMSCI170A | Mathematical Modeling and Methods for Computer Science                | COMSCIC237A | Prototyping Programming Languages                                       |
| COMSCI174A | Introduction to Computer Graphics                                     | COMSCIC237B | Programming Language Design   |
| COMSCI180  | Introduction to Algorithms and Complexity                             | COMSCICM122 | Algorithms in Bioinformatics and Systems Biology                        |
| COMSCI181  | Introduction to Formal Languages and Automata Theory                  | COMSCICM124 | Computational Genetics  |
| COMSCI183  | Introduction to Cryptography  | COMSCICM186 | Computational Systems Biology: Modeling and Simulation of Biological Sy |
| COMSCI188  | Special Courses in Computer Science                                   | COMSCICM187 | Research Communication in Computational and Systems Biology             |
| COMSCI19   | Fiat Lux Freshman Seminars  | COMSCICM222 | Algorithms in Bioinformatics and Systems Biology                        |
| COMSCI199  | Directed Research in Computer Science                                 | COMSCICM224 | Computational Genetics  |
| COMSCI201  | Computer Science Seminar  | COMSCICM286 | Computational Systems Biology: Modeling and Simulation of Biological Sy |
| COMSCI211  | Network Protocol and Systems Software Design for Wireless and Mobile  | COMSCICM287 | Research Communication in Computational and Systems Biology             |
| COMSCI217A | Internet Architecture and Protocols                                   | COMSCIM117  | Computer Networks: Physical Layer                                       |
| COMSCI217B | Advanced Topics in Internet Research                                  | COMSCIM151B | Computer Systems Architecture   |
| COMSCI218  | Advanced Computer Networks  | COMSCIM152A | Introductory Digital Design Laboratory                                  |
| COMSCI219  | Current Topics in Computer System Modeling Analysis                   | COMSCIM171L | Data Communication Systems Laboratory                                   |
| COMSCI236  | Computer Security   | COMSCIM184  | Introduction to Computational and Systems Biology                       |
| COMSCI239  | Current Topics in Computer Science: Programming Languages and Systems | COMSCIM185  | Research Opportunities in Computational and Systems Biology             |
| COMSCI240A | Databases and Knowledge Bases   | COMSCIM213A | Embedded Systems  |
| COMSCI240B | Advanced Data and Knowledge Bases                                     | COMSCIM213B | Energy-Aware Computing and Cyber-Physical Systems                       |
| COMSCI246  | Web Information Management  | COMSCIM229S | Seminar: Current Topics in Bioinformatics                               |
| COMSCI249  | Current Topics in Data Structures                                     | COMSCIM258A | Design of VLSI Circuits and Systems                                     |
| COMSCI251A | Advanced Computer Architecture  | COMSCIM266A | Statistical Modeling and Learning in Vision and Science                 |
| COMSCI251B | Parallel Computer Architectures                                       | COMSCIM266B | Statistical Computing and Inference in Vision and Image Science         |
| COMSCI251B | Arithmetic Algorithms and Processors                                  | COMSCIM268  | Machine Perception  |
| COMSCI259  | Current Topics in Computer Science: System Design/Architecture        | COMSCIM276A | Pattern Recognition and Machine Learning                                |
| COMSCI260  | Machine Learning Algorithms   | COMSCIM282A | Cryptography  |
| COMSCI261A | Problem Solving and Search  | COMSCIM282B | Cryptographic Protocols   |
| COMSCI262A | Reasoning with Partial Beliefs  | COMSCIM296D | Introduction to Computational Cardiology                                |
| COMSCI263A | Language and Thought  | COMSCIM51A  | Logic Design of Digital Systems   |
| COMSCI263C | Animats-Based Modeling  |             |   |

Total 85 records, File: db/eecs/computer-science-ucla2015

| ++<br>  id  <br>++         | title   | id                          | title   |
|----------------------------|---|-----------------------------|---|
| ELENGR10                   | Circuit Theory I  | ELENGR218                   | Network Economics and Game Theory   |
| ELENGR100                  | Electrical and Electronic Circuits  | ELENGR221A                  | Physics of Semiconductor Devices I  |
| ELENGR101A                 | Engineering Electromagnetics  | ELENGR221B                  | Physics of Semiconductor Devices II   |
| ELENGR101B                 | Electromagnetic Waves   | ELENGR222                   | Integrated Circuits Fabrication Processes   |
| ELENGR102                  | Systems and Signals   | ELENGR223                   | Solid-State Electronics I   |
| ELENGR110                  | Circuit Theory II<br>Circuit Measurements Laboratory  | ELENGR224<br>ELENGR225      | Solid-State Electronics II<br>  Physics of Semiconductor Nanostructures and Devices   |
| ELENGR110L<br>ELENGR111L   | Circuits Laboratory II  | ELENGR225<br>ELENGR230A     | Estimation and Detection in Communication and Radar Engineering   |
| ELENGR111L<br>ELENGR112    | Introduction to Power Systems   | ELENGR230B                  | Digital Communication Systems   |
| ELENGR113                  | Digital Signal Processing   | ELENGR230C                  | Algorithms and Processing in Communication and Radar  |
| ELENGR113DA                | Digital Signal Processing Design  | ELENGR231A                  | Information Theory: Channel and Source Coding   |
| ELENGR113DB                | Digital Signal Processing Design  | ELENGR231E                  | Channel Coding Theory   |
| ELENGR114                  | Speech and Image Processing Systems Design  | ELENGR232A                  | Stochastic Modeling with Applications to Telecommunication Systems  |
| ELENGR115A                 | Analog Electronic Circuits I  | ELENGR232B                  | Telecommunication Switching and Queueing Systems  |
| ELENGR115AL                | Analog Electronics Laboratory I   | ELENGR232D                  | Telecommunication Networks and Multiple-Access Communications   |
| ELENGR115B                 | Analog Electronic Circuits II   | ELENGR232E                  | Graphs and Network Flows  |
| ELENGR115C<br>ELENGR115D   | Digital Electronic Circuits   | ELENGR236A<br>ELENGR236B    | Linear Programming Convex Optimization  |
| ELENGRIISD ELENGRIIL       | Design Studies in Electronic Circuits<br>Circuits Laboratory I                                  | ELENGR236B<br>ELENGR238     | Convex Optimization<br>  Multimedia Communications and Processing   |
| ELENGRIIL ELENGRIIL        | Principles of Semiconductor Device Design   | ELENGR230<br>ELENGR239AS    | Special Topics in Signals and Systems   |
| ELENGR121DA                | Semiconductor Processing and Device Design  | ELENGR241A                  | Stochastic Processes  |
| ELENGR121DB                | Semiconductor Processing and Device Design  | ELENGR260A                  | Advanced Engineering Electrodynamics  |
| ELENGR123A                 | Fundamentals of Solid-State I   | ELENGR260B                  | Advanced Engineering Electrodynamics  |
| ELENGR123B                 | Fundamentals of Solid-State II  | ELENGR261                   | Microwave and Millimeter Wave Circuits  |
| ELENGR128                  | Principles of Nanoelectronics   | ELENGR262                   | Antenna Theory and Design   |
| ELENGR131A                 | Probability and Statistics  | ELENGR266                   | Computational Methods for Electromagnetics  |
| ELENGR132A                 | Introduction to Communication Systems   | ELENGR270                   | Applied Quantum Mechanics   |
| ELENGR132B                 | Data Communications and Telecommunication Networks  | ELENGR271                   | Classical Laser Theory  |
| ELENGR133A<br>ELENGR141    | Mathematics of Design<br>Principles of Feedback Control   | ELENGR272                   | Dynamics of Lasers  |
| ELENGR141                  | Linear Systems: State-Space Approach  | ELENGR274<br>ELENGR279AS    | Fiber Optic System Design Special Topics in Physical and Wave Electronics   |
| ELENGR142<br>ELENGR162A    | Wireless Communication Links and Antennas   | ELENGR295                   | Academic Technical Writing for Electrical Engineers   |
| ELENGR163A                 | Introductory Microwave Circuits   | ELENGR296                   | Seminar: Research Topics in Electrical Engineering  |
| ELENGR164DA                | Radio Frequency Design Project I  | ELENGR297                   | Seminar Series: Electrical Engineering  |
| ELENGR164DB                | Radio Frequency Design Project II   | ELENGR299                   | M.S. Project Seminar  |
| ELENGR170A                 | Principles of Photonics   | ELENGR3                     | Introduction to Electrical Engineering  |
| ELENGR170B                 | Photonic Devices and Circuits   | ELENGR375                   | Teaching Apprentice Practicum   |
| ELENGR170C                 | Photonic Sensors and Solar Cells  | ELENGR99                    | Student Research Program  |
| ELENGR173DA<br>ELENGR173DB | Photonics and Communication Design Photonics and Communication Design                           | ELENGRCM150<br>ELENGRCM150L | Introduction to Micromachining and Microelectromechanical Systems (MEMS) Introduction to Micromachining and Microelectromechanical Systems (MEM |
| ELENGR175DB                | Photonics and Communication besign Photonics in Biomedical Applications                         | ELENGREMISOL<br>ELENGREM182 | Science, Technology, and Public Policy  |
| ELENGR180DA                | Systems Design  | ELENGRCM250A                | Introduction to Micromachining and Microelectromechanical Systems (MEMS)  |
| ELENGR180DB                | Systems Design  | ELENGRCM250L                | Introduction to Micromachining and Microelectromechanical Systems (MEM  |
| ELENGR188                  | Special Courses in Electrical Engineering   | ELENGRCM282                 | Science, Technology, and Public Policy  |
| ELENGR199                  | Directed Research in Electrical Engineering   | ELENGRM116C                 | Computer Systems Architecture   |
| ELENGR2                    | Physics for Electrical Engineers  | ELENGRM116L                 | Introductory Digital Design Laboratory  |
| ELENGR201A                 | VLSI Design Automation  | ELENGRM117                  | Computer Networks: Physical Layer   |
| ELENGR201D                 | Design in Nanoscale Technologies  | ELENGRM16                   | Logic Design of Digital Systems   |
| ELENGR202C                 | Networked Embedded Systems Design   | ELENGRM171L                 | Data Communication Systems Laboratory   |
| ELENGR205A<br>ELENGR209AS  | Matrix Analysis for Scientists and Engineers<br>Special Topics in Circuits and Embedded Systems | ELENGRM185<br>ELENGRM202A   | Introduction to Plasma Electronics Embedded Systems   |
| ELENGR209BS                | Seminar: Circuits and Embedded Systems  | ELENGRM202A<br>ELENGRM202B  | Energy-Aware Computing and Cyber-Physical Systems   |
| ELENGR210A                 | Adaptation and Learning   | ELENGRM214A                 | Digital Speech Processing   |
| ELENGR210B                 | Inference over Networks   | ELENGRM216A                 | Design of VLSI Circuits and Systems   |
| ELENGR211A                 | Digital Image Processing I  | ELENGRM217                  | Biomedical Imaging  |
| ELENGR214B                 | Advanced Topics in Speech Processing  | ELENGRM240A                 | Linear Dynamic Systems  |
| ELENGR215A                 | Analog Integrated Circuit Design  | ELENGRM250B                 | Microelectromechanical Systems (MEMS) Fabrication   |
| ELENGR215B                 | Advanced Digital Integrated Circuits  | ELENGRM252                  | Microelectromechanical Systems (MEMS) Device Physics and Design   |
| ELENGR215C                 | Analysis and Design of RF Circuits and Systems  | ELENGRM255                  | Neuroengineering  |
| ELENGR215D                 | Analog Microsystem Design   | ELENGRM256A                 | Evaluation of Research Literature in Neuroengineering   |
| ELENGR215E<br>ELENGR216B   | Signaling and Synchronization VLSI Signal Processing  | ELENGRM257                  | Nanoscience and Technology  |
|                            | VINT VINIUL LINGGAALIN  |                             |   |

| id               | title  | id               | title  |
|------------------|--|------------------|--|
| CS1109           | Fundamental Programming Concepts   | CS5432           | Physical Computing   |
| CS1110           | Introduction to Computing Using Python   | CS5434           | Defending Computer Networks  |
| CS1112           | Introduction to Computing Using MATLAB   | CS5435           | Security and Privacy Concepts in the Wild (Offered in NYC only)                          |
| CS1114<br>CS1115 | Introduction to Computing Using MATLAB and Robotics Introduction to Computational Science and Engineering Using Matlab Graphical | CS5450<br>CS5454 | Computer Networking Mobile and Ubiquitous Computing (Offered in NVC only)                |
| CS1113<br>CS1130 | Transition to Object-Oriented Programming  | CS5454<br>CS5460 | Mobile and Ubiquitous Computing (Offered in NYC only) Parallel and Distributed Computing |
| CS1130           | Transition to MATLAB   | CS55400          | Computational Techniques for Analyzing Clinical Data                                     |
| CS1133           | Transition to Python   | CS5555           | Health Tech, Data, and Systems   |
| CS1142           | Introduction to MATLAB   | CS5620           | Introduction to Computer Graphics  |
| CS1300           | Introductory Design and Programming for the Web  | CS5621           | Computer Graphics Practicum  |
| CS1305           | Computation and Culture in a Digital Age   | CS5625           | Interactive Computer Graphics  |
| CS1610           | Computing in the Arts  | CS5643           | Physically Based Animation for Computer Graphics   |
| CS1620           | Visual Imaging in the Electronic Age   | CS5660           | Signal Processing (Offered in NYC only)  |
| CS1710<br>CS1810 | Introduction to Cognitive Science<br>Topics in the Analysis and Transmission of Knowledge and Information                        | CS5670<br>CS5722 | Introduction to Computer Vision<br>Heuristic Methods for Optimization                    |
| CS1830           | Voting: Does Democracy Have a Voice?   | CS5724           | Evolutionary Computation   |
| CS2022           | Introduction to C  | CS5740           | Introduction to Natural Language Processing  |
| CS2024           | C++ Programming  | CS5752           | Robotic Manipulation   |
| CS2043           | UNIX Tools and Scripting   | CS5761           | Hybrid Systems   |
| CS2048           | Introduction to iPhone App Development (Offered in Ithaca and NYC)   | CS5780           | Machine Learning   |
| CS2049           | Intermediate iPhone App Development  | CS5785           | Modern Analytics (Offered in NYC only)   |
| CS2110           | Object-Oriented Programming and Data Structures  | CS5786           | Machine Learning for Data Science  |
| CS2111<br>CS2112 | Programming Practicum<br>Object-Oriented Design and Data Structures - Honors   | CS5830<br>CS5831 | Cryptography Security Protocols and Privacy  |
| CS2112<br>CS2300 | Intermediate Design and Programming for the Web  | CS5831   CS5840  | Algorithms for Markets   |
| CS2770           | Excursions in Computational Sustainability   | CS5846           | Decision Theory I  |
| CS2800           | Discrete Structures  | CS5860           | Introduction to Formal Methods   |
| CS2850           | Networks   | CS5998           | Master of Engineering Internship   |
| CS3110           | Data Structures and Functional Programming   | CS5999           | Master of Engineering Project  |
| CS3152           | Introduction to Computer Game Architecture   | CS6110           | Advanced Programming Languages   |
| CS3300           | Data-Driven Web Applications   | CS6112           | Foundations of Concurrency   |
| CS3410           | Computer System Organization and Programming   | CS6113           | Language-Based Security  |
| CS3420<br>CS3740 | Embedded Systems Computational Linguistics   | CS6114<br>CS6115 | Network Programming Languages<br>Certified Software Systems                              |
| CS3758           | Autonomous Mobile Robots   | CS6116           | Programming Languages and Logics Laboratory  |
| CS4090           | Teaching Experience in Computer Science  | CS6117           | Category Theory for Computer Scientists  |
| CS4110           | Programming Languages and Logics   | CS6118           | Types and Semantics  |
| CS4120           | Introduction to Compilers  | CS6210           | Matrix Computations  |
| CS4121           | Practicum in Compilers   | CS6220           | Data-Sparse Matrix Computations  |
| CS4152           | Advanced Topics in Computer Game Architecture  | CS6320           |  |
| CS4154<br>CS4210 | Analytics-driven Game Design<br>Numerical Analysis and Differential Equations  | CS6360<br>CS6410 | Educational Technology<br>Advanced Systems   |
| CS4210<br>CS4220 | Numerical Analysis: Linear and Nonlinear Problems  | CS6431           | Security and Privacy Technologies (Offered in NYC and, by distance learning,             |
| CS4300           | Language and Information   | CS6451           | Datacenter Networks and Services   |
| CS4302           | Web Information Systems  | CS6460           | Peer-to-Peer Systems   |
| CS4320           | Introduction to Database Systems   | CS6620           | Advanced Interactive Graphics  |
| CS4321           | Practicum in Database Systems  | CS6630           | Realistic Image Synthesis  |
| CS4410           | Operating Systems  | CS6640           | Computational Photography  |
| CS4411           | Practicum in Operating Systems   | CS6644           | Modeling the World   |
| CS4420<br>CS4620 | Computer Architecture<br>Introduction to Computer Graphics   | CS6650<br>CS6670 | Computational Motion<br>Computer Vision  |
| CS4620<br>CS4621 | Computer Graphics Practicum  | CS6700           | Computer Vision Advanced Artificial Intelligence   |
| CS4621<br>CS4670 | Introduction to Computer Vision  | CS6700           | Topics in Computational Sustainability   |
| CS4700           | Foundations of Artificial Intelligence   | CS6740           | Advanced Language Technologies   |
| CS4701           | Practicum in Artificial Intelligence   | CS6742           | Natural Language Processing and Social Interaction                                       |
| CS4740           | Introduction to Natural Language Processing  | CS6751           | Introduction to Robotic Mobile Manipulation  |
| CS4744           | Computational Linguistics  | CS6756           | Advanced Topics in Robot Learning: 3D Perception   |
| CS4752           | Robotic Manipulation   | CS6758           | Robot Learning   |
| CS4758           | Robot Learning   | CS6764           | Reasoning about Knowledge  |
| CS4780<br>CS4786 | Machine Learning<br>Machine Learning for Data Science  | CS6766<br>CS6780 | Reasoning about Uncertainty<br>Advanced Machine Learning                                 |
| CS4786<br>CS4810 | Introduction to Theory of Computing  | CS6780<br>CS6782 | Probabilistic Graphical Models   |
| CS4812           | Quantum Information Processing   | CS6783           | Machine Learning Theory  |
| CS4820           | Introduction to Analysis of Algorithms   | CS6784           | Advanced Topics in Machine Learning  |
| CS4830           | Introduction to Cryptography   | CS6810           | Theory of Computing  |
| CS4840           | Algorithms for Markets   | CS6820           | Analysis of Algorithms   |
| CS4850           | Mathematical Foundations for the Information Age   | CS6822           | Advanced Topics in Theory of Computing   |
| CS4860           | Applied Logic  | CS6825           | The Science Base for the Information Age   |
| CS4999           | Independent Reading and Research   | CS6830           | Cryptography (Offered in NYC and, by distance learning, in Ithaca)                       |
| CS5091<br>CS5092 | Conversations in the Studio (Offered in NYC only) Entrepreneurial Lens (Offered in NYC only)                                     | CS6840<br>CS6850 | Algorithmic Game Theory<br>The Structure of Information Networks                         |
| CDJU32           | BUCLEDIGULIAL DEUS (OLIELEA IN MIC OULY)   | 100000           | THE DELICERIE OF THIOTHWESTON MESMOTVE   |

| CS5110<br>CS5114<br>CS5120<br>CS5121<br>CS5150<br>CS5152<br>CS5191<br>CS5220<br>CS5223<br>CS5320<br>CS5320<br>CS5321<br>CS5321<br>CS5356<br>CS5412 | Programming Languages and Logics Network Programming Languages Introduction to Compilers Practicum in Compilers Software Engineering Open-Source Software Engineering Studio (Offered in NYC only) Applications of Parallel Computers Numerical Analysis: Linear and Nonlinear Problems The Architecture of Large - Scale Information Systems Introduction to Database Systems (Offered in Ithaca and NYC) Practicum in Database Systems Building Startup Systems (Offered in NYC only) Cloud Computing High Performance Systems and Networking | CS6860<br>CS6862<br>CS7090<br>CS7190<br>CS7192<br>CS7290<br>CS7390<br>CS7412<br>CS7490<br>CS7594<br>CS7690<br>CS7790<br>CS7790 | Logics of Programs Automated Reasoning and Formal Methods Computer Science Colloquium Seminar in Programming Languages Seminar in Programming Refinement Logics Seminar on Scientific Computing and Numerics Database Seminar Scalable Distributed Consistency: Models and Applications Systems Research Seminar Seminar on Computational Issues in Health and Medicine (Offered in NYC only) Special Topics in Computer Vision Computer Graphics Seminar Seminar in Artificial Intelligence Seminar in Natural Language Understanding Seminar in Theory of Algorithms and Computing |
|--|---|--|--|
| CS5412   | Cloud Computing   |  | Seminar in Natural Language Understanding  |
| CS5414<br>CS5420   | Distributed Computing Principles Advanced Computer Architecture   | CS7893<br>CS7999   | Cryptography Seminar Independent Research  |
| CS5430   | System Security   | CS9999   | Thesis Research  |

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| id                             | title   | id                 | title   |
|--------------------------------|---|--------------------|---|
| ACM11                          | Introduction to Matlab and Mathematica                        | BEM/EC/CS134       | Robust Mechanism Design                                   |
| ACM95/100abc                   | Introductory Methods of Applied Mathematics                   | EE/CS/EST135       | Power System Analysis                                     |
| ACM101ab                       | Methods of Applied Mathematics                                | CS138              | Computer Algorithms                                       |
| ACM/CMS104                     | Linear Algebra and Applied Operator Theory                    | CS/CMS139          | Analysis and Design of Algorithms                         |
| ACM105                         | Applied Real and Functional Analysis                          | CS142              | Distributed Computing                                     |
| ACM106ab                       | Introductory Methods of Computational Mathematics             | CS/EE143           | Communication Networks                                    |
| ACM/CMS113                     | Mathematical Optimization                                     | CS/EE/CMS144       | Networks: Structure Economics                             |
| ACM/CS114ab                    | Parallel Algorithms for Scientific Applications               | CS/EE145           | Projects in Networking                                    |
| ACM/EE/CMS116                  | Introduction to Stochastic Processes and Modeling             | CS/EE146           | Advanced Networking                                       |
| AM/ACM127                      | Calculus of Variations  | CS/EE147           | Network Performance Analysis                              |
| Ma/ACM142                      | Ordinary and Partial Differential Equations                   | EE/CNS/CS148ab     | Selected Topics in Computational Vision                   |
| Ma/ACM144ab                    | Probability   | SS/CS149           | Introduction to Algorithmic Economics                     |
| ACM/EE/CMS170                  | Mathematics of Signal Processing                              | CS150              | Probability and Algorithms                                |
| ACM190                         | Reading and Independent Study                                 | CS151              | Complexity Theory   |
| ACM201ab                       | Partial Differential Equations                                | CS/SS152           | Introduction to Data Privacy                              |
| ACM204                         | Topics in Convexity   | CS153              | Current Topics in Theoretical Computer Science            |
| ACM210ab                       | Numerical Methods for PDEs                                    | CS/CNS/EE/NB154    | Artificial Intelligence                                   |
| ACM216                         | Markov Chains, Discrete Stochastic Processes and Applications | CS/CNS/EE155       | Machine Learning Data Mining                              |
| ACM217ab                       | Advanced Topics in Stochastic Analysis                        | CS/CNS/EE156ab     | Learning Systems  |
| ACM/CS/EE/CMS218               | Statistical Inference   | CS/CNS/EE159       | Projects in Machine Learning and AI                       |
| Ae/ACM/ME232ab                 | Computational Fluid Dynamics                                  | CS/CNS171          | Introduction to Computer Graphics Laboratory              |
| ACM256ab                       | Special Topics in Applied Mathematics                         | CS/CNS174          | Computer Graphics Projects                                |
| ACM257                         | Special Topics in Financial Mathematics                       | CS176              | Introduction to Computer Graphics Research                |
| ACM270                         | Advanced Topics in Applied and Computational Mathematics      | CS177              | Discrete Differential Geometry: Theory and Applications   |
| ACM300                         | Research in Applied and Computational Mathematics             | CS179              | GPU Programming   |
| CS1                            | Introduction to Computer Programming                          | CS180              | Master is Thesis Research                                 |
| CS2                            | Introduction to Programming Methods                           | CS/EE181abc        | VLSI Design Laboratory                                    |
| CS3                            | Introduction to Software Engineering                          | CNS/Bi/EE/CS/NB186 | Vision: From Computational Theory to Neuronal Mechanisms  |
| CS4                            | Fundamentals of Computer Programming                          | CNS/Bi/Ph/CS/NB187 | Neural Computation  |
| Ma/CS6abc                      | Introduction to Discrete Mathematics                          | BE/CS/CNS/Bi191ab  | Biomolecular Computation                                  |
| CS9                            | Introduction to Computer Science Research                     | BE/CS196ab         | Design and Construction of Programmable Molecular Systems |
| CS11                           | Computer Language Shop  | ACM/CS/EE/CMS218   | Statistical Inference                                     |
| CS21                           | Decidability and Tractability                                 | Ph/CS219a          | Quantum Computation                                       |
| CS24                           | Introduction to Computing Systems                             | SS/CS241           | Topics in Algorithmic Economics                           |
| CS38                           | Introduction to Algorithms                                    | CS/CNS/EE253       | Special Topics in Machine Learning                        |
| EE/CS51                        | Principles of Microprocessor Systems                          | CS274abc           | Topics in Computer Graphics                               |
| EE/CS52                        | Microprocessor Systems Laboratory                             | CS280              | Research in Computer Science                              |
| EE/CS53                        | Microprocessor Project Laboratory                             | CS282abc           | Reading in Computer Science                               |
| CS/EE/ME75abc                  | Introduction to Multidisciplinary Systems Engineering         | CS286abc           | Seminar in Computer Science                               |
| CS80abc                        | Undergraduate Thesis  | ACM/CMS104         | Linear Algebra and Applied Operator Theory                |
| CS81abc                        | Undergraduate Projects in Computer Science                    | ACM/CMS113         | Mathematical Optimization                                 |
| CS90                           | Undergraduate Reading in Computer Science                     | ACM/EE/CMS116      | Introduction to Stochastic Processes and Modeling         |
| CS101abc                       | Special Topics in Computer Science                            | CS/EE/CMS144       | Networks: Structure Economics                             |
| CS102abc                       | Seminar in Computer Science                                   | ACM/CS/EE/CMS218   | Statistical Inference                                     |
| CS102abc                       | Reading in Computer Science                                   | ACM/EE/CMS170      | Mathematics of Signal Processing                          |
| ACM/CS114ab                    | Parallel Algorithms for Scientific Applications               | CS/CMS139          | Analysis and Design of Algorithms                         |
| CS115                          | Functional Programming  | CMS290abc          | Computing and Mathematical Sciences Colloquium            |
| CS116                          | Reasoning about Program Correctness                           | CDS90abc           | Senior Thesis in Control and Dynamical Systems            |
| Ma/CS117abc                    | Computability Theory  | CDS101             | Design and Analysis of Feedback Systems                   |
| CS118                          | Logic Model Checking for Formal Software Verification         | CDS110             | Introduction to Feedback Control Systems                  |
| CS119                          | Reliable Software: Testing and Monitoring                     | CDS112             | Control System Design                                     |
| CS121                          | Introduction to Relational Databases                          | CDS140             | Introduction to Dynamics                                  |
| CS121                          | Database System Implementation                                | CDS190             | Independent Work in Control and Dynamical Systems         |
| CS122<br> CS123                | Projects in Database Systems                                  | CDS212             | Introduction to Modern Control                            |
| CS123<br> CS124                | Operating Systems   | CDS212             | Robust Control  |
| EE/Ma/CS126ab                  | Information Theory  | CDS213             | Nonlinear Dynamical Systems                               |
| EE/Ma/CS120ab  <br>EE/Ma/CS127 | Error-Correcting Codes  | Ae/CDS/ME251ab     | Closed Loop Flow Control                                  |
| CS/EE/Ma129abc                 | Information and Complexity                                    | CDS270             | Advanced Topics in Systems and Control                    |
| ME/CS132ab                     | Advanced Robotics: Navigation and Vision                      | CDS300abc          | Research in Control and Dynamical Systems                 |
| Ec/CS132ab                     | Electricity Markets   | <br>               | Research in control and bynamical systems                 |
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|-------------------|--|---------------|--|--|
| COMP1001          | Exploring Multimedia and Internet Computing                  | COMP4641      | Social Information Network Analysis and Engineering          |  |
| COMP1002          | Computer and Programming Fundamentals I                      | COMP4900      | Academic and Professional Development                        |  |
| COMP1003          | Computer and Programming Fundamentals II                     | COMP4901      | Special Topics in Computer Science                           |  |
| COMP1021          | Introduction to Computer Science                             | COMP4911      | IT Entrepreneurship  |  |
| COMP1022P         | Introduction to Computing with Java                          | COMP4971      | Independent Work   |  |
| COMP1022Q         | Introduction to Computing with Excel VBA                     | COMP4981      | Final Year Project   |  |
| COMP1029A         | Introduction to Mobile Application Development Using Android | COMP4981H     | Final Year Thesis  |  |
| COMP1029C         | C Programming Bridging Course                                | COMP4982      | Final Year Project   |  |
| COMP1029J         | Java Programming Bridging Course                             | COMP4982H     | Final Year Thesis (Honors Study Track)                       |  |
| COMP1029P         | Python Programming Bridging Course                           | COMP4983      | Final Year Project I   |  |
| COMP1029V         | Excel VBA Programming Bridging Course                        | COMP4983H     | Final Year Thesis I (Honors Study Track)                     |  |
| COMP1900          | Academic and Professional Development I                      | COMP4984      | Final Year Project II  |  |
| COMP1941          | Computational Thinking for Everyone in the Internet Age      | COMP4984H     | Final Year Thesis II (Honors Study Track)                    |  |
| COMP1942          | Exploring and Visualizing Data                               | COMP4988      | Computer Engineering Final Year Project                      |  |
| COMP1942          | Industrial Experience  | COMP4989      | Computer Engineering Final Year Thesis                       |  |
| COMP1991          |  | COMP4989      |  |  |
|                   | Industrial Training  | : :           | Computer Engineering Final Year Project                      |  |
| COMP2011          | Introduction to Object-oriented Programming                  | COMP4992      | Computer Engineering Final Year Thesis                       |  |
| COMP2012          | Object-Oriented Programming and Data Structures              | COMP4993      | Computer Engineering Final Year Project I                    |  |
| COMP2012H         | Honors Object-Oriented Programming and Data Structures       | COMP4994      | Computer Engineering Final Year Project II                   |  |
| COMP2021          | Unix and Script Programming                                  | COMP4995      | Computer Engineering Final Year Project III                  |  |
| COMP2611          | Computer Organization  | COMP4996      | Computer Engineering Final Year Thesis I                     |  |
| COMP2711          | Discrete Mathematical Tools for Computer Science             | COMP4997      | Computer Engineering Final Year Thesis II                    |  |
| COMP2711H         | Honors Discrete Mathematical Tools for Computer Science      | COMP4998      | Computer Engineering Final Year Thesis III                   |  |
| COMP2900          | Academic and Professional Development II                     | COMP5111      | Fundamentals of Software Analysis                            |  |
| COMP3021          | Java Programming   | COMP5211      | Advanced Artificial Intelligence                             |  |
| COMP3031          | Principles of Programming Languages                          | COMP5212      | Machine Learning   |  |
| COMP3071          | Honors Competitive Programming                               | COMP5213      | Introduction to Bayesian Networks                            |  |
| COMP3111          | Software Engineering   | COMP5221      | Natural Language Processing                                  |  |
| COMP3111H         | Honors Software Engineering                                  | COMP5311      | Database Architecture and Implementation                     |  |
| COMP3211          | Fundamentals of Artificial Intelligence                      | COMP5331      | Knowledge Discovery in Databases                             |  |
| COMP3311          | Database Management Systems                                  | COMP5411      | Advanced Computer Graphics                                   |  |
| COMP3511          | Operating Systems  | COMP5421      | Computer Vision  |  |
| COMP3711          | Design and Analysis of Algorithms                            | COMP5531      | Green Computing  |  |
| COMP3711H         | Honors Design and Analysis of Algorithms                     | COMP5621      | Computer Networks  |  |
| COMP3721          | Theory of Computation  | COMP5622      | Advanced Computer Communications and Networking              |  |
| COMP3900          | Academic and Professional Development III                    | COMP5631      | Cryptography and Security                                    |  |
| COMP4021          | Internet Computing   | COMP5711      | Introduction to Advanced Algorithmic Techniques              |  |
| COMP4111          | Software Engineering Laboratory                              | COMP5712      | Introduction to Combinatorial Optimization                   |  |
| COMP4211          | Machine Learning   | COMP5713      | Computational Geometry                                       |  |
| COMP4221          | Introduction to Natural Language Processing                  | COMP6111      | Topics in Software Engineering                               |  |
| COMP4311          | Principles of Database Design                                | COMP6211      | Advanced Topics in Artificial Intelligence                   |  |
| COMP4311          | Search Engines for Web and Enterprise Data                   | COMP6311      | Topics in Database Systems                                   |  |
| COMP4321 COMP4331 | Data Mining  | COMP6311      | Topics in Graphics   |  |
| COMP4331 COMP4332 |  | COMP6411      | Topics in Graphics Topics in Computer Systems Analysis       |  |
| COMP4332 COMP4411 | Big Data Mining and Management                               |               |  |  |
|                   | Computer Graphics  | COMP6611      | Topics in Computer and Communication Networks                |  |
| COMP4421          | Image Processing   | COMP6612      | Topics in Computer Engineering                               |  |
| COMP4431          | Multimedia Computing   | COMP6613      | Topics in Applications of Computer Science and Engineering   |  |
| COMP4441          | Computer Music   | COMP6711      | Topics in Theoretical Computer Science                       |  |
| COMP4451          | Game Programming   | COMP6770      | Professional Development in Computer Science and Engineering |  |
| COMP4511          | Operating Systems Laboratory                                 | COMP6911      | Computer Science and Engineering Seminar I                   |  |
| COMP4521          | Embedded Systems Software                                    | COMP6912      | Computer Science and Engineering Seminar II                  |  |
| COMP4611          | Design and Analysis of Computer Architectures                | COMP6921-6922 | Research Project   |  |
| COMP4621          | Computer Communication Networks I                            | COMP6931-6932 | Independent Studies  |  |
| COMP4622          | Computer Communication Networks II                           | COMP6990      | MPhil Thesis Research  |  |
| i                 | Computer and Communication Security                          | COMP7990      | Doctoral Thesis Research                                     |  |
| COMP4631          | computer and communication security                          | COM 7550      | Bootoful inobib Roboulon                                     |  |

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| ELEC1010                | Electronic and Information Technology                             | ELEC4905              | Computer Engineering Final Year Project I                       |
| ELEC1020                | Media Production: Technology and Design                           | ELEC4907              | Final Year Project  |
| ELEC1100                | Introduction to Electro-Robot Design                              | ELEC4908              | Final Year Thesis   |
| ELEC1200                | A System View of Communications: from Signals to Packets          | ELEC4909              | Final Year Project in Entrepreneurship                          |
| ELEC1970                | Industrial Training   | ELEC4910              | Final Year Project II   |
| ELEC1971                | Industrial Experience (Computer Engineering)                      | ELEC4911              | Final Year Thesis II  |
| ELEC1980                | Industrial Training   | ELEC4912              | Final Year Project in Entrepreneurship II                       |
| ELEC1990                | Industrial Training   | ELEC4915              | Computer Engineering Final Year Project II                      |
| ELEC1991                | Industrial Experience (Electronic Engineering)                    | ELEC4918              | Computer Engineering Final Year Project                         |
| ELEC2100                | Signals and Systems   | ELEC4919              | Computer Engineering Final Year Thesis                          |
| ELEC2200                | Digital Circuits and Systems                                      | ELEC4920              | Final Year Project III  |
| ELEC2300                | Computer Organization   | ELEC4921              | Final Year Thesis III   |
| ELEC2400                | Electronic Circuits   | ELEC4922              | Final Year Project in Entrepreneurship III                      |
| ELEC2410                | Basic Electronics   | ELEC4925              | Computer Engineering Final Year Project III                     |
| ELEC2420                | Basic Electronics   | ELEC4930              | Academic and Professional Development III                       |
| ELEC2600                | Probability and Random Processes in Engineering                   | ELEC4940              | Independent Study   |
| ELEC2910                | Academic and Professional Development I                           | ELEC4950              | Research Work Experience  |
| ELEC2920                | Professional Development in Engineering Business I                | ELEC5010              | Introduction to the Design & Implementation of Micro-Systems    |
| ELEC2930                | Academic and Professional Development I                           | ELEC5040              | Advanced Analog IC Analysis and Design                          |
| ELEC3100                | Signal Processing and Communications                              | ELEC5050              | Advanced CMOS Devices   |
| ELEC3200                | System Modeling, Analysis and Control                             | ELEC5070              | Microelectronics Fabrication Technology                         |
| ELEC3300                | Introduction to Embedded Systems                                  | ELEC5080              | Integrated-Circuit Fabrication Laboratory                       |
| ELEC3400                | Introduction to Integrated Circuits and Systems                   | ELEC5090              | Advanced Photonics Technologies                                 |
| ELEC3500                | Microelectronic Devices and Technology                            | ELEC5110              | Nanoelectronic Materials for Energy Technologies                |
| ELEC3600                | Electromagnetics: From Wireless to Photonic Applications          | ELEC5120              | Semiconductor Power and Energy Conversion Technologies          |
| ELEC3710                | Hi-Tech Entrepreneurship  | ELEC5160              | Digital VLSI System Design and Design Automation                |
| ELEC3900                | Introduction to Electronic and Computer Technology                | ELEC5180              | RF/Microwave Circuit Design and Measurement                     |
| ELEC3910                | Academic and Professional Development II                          | ELEC5190              | Solid State and Semiconductor Electronics                       |
| ELEC3920                | Professional Development in Engineering Business II               | ELEC5210              | Advanced Topics in Nanoelectronics                              |
| ELEC3930                | Academic and Professional Development II                          | ELEC5220              | Applications of Nanotechnologies to Photonics and Displays      |
| ELEC4010                | Special Topics  | ELEC5230              | Novel Liquid Crystal Devices for Photonics and Displays         |
| ELEC4110                | Digital Communications and Wireless Systems                       | ELEC5250              | Flat-Panel Displays   |
| ELEC4120                | Computer Communication Networks                                   | ELEC5280              | High Frequency Circuit Design                                   |
| ELEC4130                | Digital Image Processing  | ELEC5300              | Stochastic Processes  |
| ELEC4140                | Speech and Image Compression                                      | ELEC5320              | Digital Image Processing  |
| ELEC4150                | Information Theory and Error-Correcting Codes                     | ELEC5330              | Video-Signal Processing   |
| ELEC4160                | Introduction to Digital Speech Recognition                        | ELEC5350              | Multimedia Networks   |
| ELEC4170  <br> ELEC4210 | Digital Media and Multimedia Applications Digital Control Systems | ELEC5360<br> ELEC5370 | Principles of Digital Communications Communication Networks     |
| ELEC4210                | Introduction to Robotics: From Mobile Robots to Manipulators      | ELEC5460              | Advanced Stochastic Optimization for Wireless Systems           |
| ELEC4220  <br> ELEC4310 | Embedded System Design  | ELEC5470              | Convex Optimization   |
| ELEC4410                | CMOS VLSI Design  | ELEC5470              | Coding and Information Theory                                   |
| ELEC4410                | Analogue Integrated Circuits Design and Analysis                  | ELEC5400              | Switch Mode Power Converters                                    |
| ELEC4420                | Integrated Power Electronics                                      | ELEC5510              | Power Management Integrated Circuit Design                      |
| ELEC4430                | Reconfigurable Computing: From Theory to Practice                 | ELEC5520              | Mixed-Signal Integrated Bio-Sensory Circuit Design              |
| ELEC4510                | Semiconductor Materials and Devices                               | ELEC5530              | Linear-System Theory  |
| ELEC4510                | Integrated Circuit Fabrication Technology                         | ELEC5610              | Multivariable Control   |
| ELEC4520                | Engineering Optics  | ELEC5640              | Robot Manipulation  |
| ELEC4620                | Photonics and Optical Communications                              | ELEC5650              | Introduction to Networked Sensing, Estimation and Control       |
| ELEC4630                | Radio Frequency Engineering                                       | ELEC5810              | Introduction to Bioinformatics Algorithms                       |
| ELEC4640                | Modern Optics   | ELEC5820              | Fundamentals of BioMEMS and Biomedical Microdevices             |
| ELEC4810                | Introduction to Biosensors and Bioinstrumentation                 | ELEC5900              | Modern Engineering Research Methodologies                       |
| ELEC4820                | Medical Imaging   | ELEC6770              | Professional Development in Electronic and Computer Engineering |
| ELEC4900                | Final Year Design Project   | ELEC6900              | Independent Study   |
| ELEC4901                | Final Year Thesis   | ELEC6910-6940         | Special Topics  |
| ELEC4902                | Final Year Project in Entrepreneurship I                          | ELEC6950              | Departmental Seminar  |
|                         |   | : :                   | MPhil Thesis Research   |
| ELEC4903                | Computer Engineering Final Year Project                           | ELEC6990              | MPNII Thesis Research   |