

# Applied Quantitative Sciences

## 2018-2019 Catalog Year

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This list of courses is designated for students who are pursuing the Applied Quantitative Sciences degree.

Students will complete 15 credit hours of required courses distributed across four categories:

**Statistics**, 6 hours; only 3 hours may be lower-division

**Data Skills**, 3 hours

**Technical/Professional Communication**, 3 hours

**Capstone/Project**, 3 hours

**Upper Division Major Electives**, (21 hours for standalone major, 9 hours for concurrent degree majors) – major elective hours may be filled by any upper division courses listed under the Statistics, Data Skills, Technical/Professional Communication, or Capstone/Project tables. Major Electives are in addition to courses already counting to meet one of the four category requirements.

### Statistics

ABS 350 Applied Statistics (3)  
ACT 201 Intro to Elements & Tech. of Actuarial Science (3)  
ACT 415 Probability for Risk Management (3)  
ACT 430 Mathematics of Financial Derivatives (3)  
ACT 435 Actuarial Business Forecasting (3)  
AGB 360 Agribusiness Statistics (3)  
AGB 481 Strategic Pricing in Food Markets (3)  
AML 441 Math. Concepts & Tools in Sustainability (3)  
ASM 465 Quantification & Analysis for Anthropologists (3)  
BIO 355 Intro to Computational Molecular Biology (3)  
BIO 406 Computer Applications in Biology (3)  
BIO 415 Biometry (4)  
BIO 424 Dynamic Modeling in Social & Eco Systems (4)  
BUS 434 Risk Management and Insurance (3)  
CHM 240 Mathematical Methods in Chemistry (3)  
CIS 309 Business Process Management (3)  
CIS 405 Business Intelligence (3)  
CRJ 303 Statistical Analysis (3)

ECN 221 Business Statistics (3)  
ECN 231 Honors Business Statistics (3)  
ECN 410 Applied Regression Analysis and Forecasting (3)  
ECN 416 Game Theory and Economic Behavior (3)  
ECN 425 Introduction to Econometrics (3)  
ECN 470 Mathematical Economics (3)  
EGR 280 Engineering Statistics (3)  
FIN 421 Security Analysis and Portfolio Management (3)  
GIS 220 Mathematical Principles in GIS (3)  
GIS 431 Spatial Databases (3)  
GIS 461 Optimization Fundamentals for Spatial Analysis (3)  
GIS 462 Location Analysis and Modeling (3)  
GIS 470 Statistics for Geographers (3)  
GIS 471 Geographic Information Analysis (3)  
GIS 472 Spatial Regression Analysis (3)  
HCD 300 Biostatistics (3)  
IEE 380 Probability & Stats Engineering Problem Solving (3)  
JUS 302 Statistical Analysis for Justice Studies (3)  
MAT 351 Mathematical Methods for Genetic Analysis (3)  
MAT 355 Intro to Computational Molecular Biology (3)  
MAT 451 Mathematical Modeling (3)  
MBB 355 Intro to Computational Molecular Biology (3)  
PAF 301 Applied Statistics (3)  
PBH 300 Biostatistics (3)  
PHY 201 Mathematical Methods in Physics I (3)  
PHY 302 Mathematical Methods in Physics II (3)  
POS 401 Political Statistics (3)  
PSY 230 Intro to Statistics (3)  
PSY 231 Honors Introduction to Statistics (4)  
PSY 330 Statistical Methods (3)  
PUP 481 Optimization Fundamentals for Spatial Analysis (3)  
PUP 482 Location analysis and Modeling (3)  
SBS 304 Social Statistics I (3)  
SCM 315 Business Decision Models (3)  
SCM 440 Quality Management/Measurement (3)  
SOC 390 Social Statistics I (3)  
SOS 101 Intro to App Math for Life & Social Science (3)  
STP 220 Conceptual Statistics (3)  
STP 226 Elements of Statistics (3)  
STP 231 Statistics for the Life Sciences (3)  
STP 310 Design and Analysis of Experiments (3)  
STP 311 Regression and Time Series Analysis (3)  
STP 326 Intermediate Probability (3)  
STP 420 Introductory Applied Statistics (3)  
STP 421 Probability (3)  
STP 425 Stochastic processes (3)  
STP 427 Mathematical Statistics (3)  
STP 429 Experimental Statistics (3)  
STP 450 Nonparametric Statistics (3)  
STP 452 Multivariate Statistics (3)  
STP 460 Categorical Data Analysis (3)  
STS 401 Statistics in Science Technology & Society (3)  
SWU 321 Statistics for Social Workers (3)

## Data Skills

- ACO 100 All About Data (3)
- ACO 220 Intro to Database Systems (3)
- AFR 490 Filed Studies in the Diaspora (3)
- AIS 420 American Indian Studies Research Methods (3)
- AML 253 Intro Math. Tools & Modeling Life & Social Sci. (3)
- AML 330 Social Simulation (4)
- ARE 496 Methods and Assessment of Learning (3)
- ARS 480 Research Methods (3)
- ART 435 Foundry Research Methods (1-4)
- ASB 230 Beginning Social Research (3)
- ASB 302 Ethnographic Field Study (3)
- ASB 430 Social Simulation (4)
- ASB 443 Cross-Cultural Studies in Global Health (3-6)
- ASM 338 Anthropological Field Session (1-12)
- ASM 365 Doing Archaeology (3-4)
- AM 424 Dynamic Modeling in Social & Eco Systems (4)
- BCH 392 Intro to Research Techniques (1-3)
- BCH 467 Analytical Biochemistry Laboratory (3)
- BIO 314 Research Colloquium in Biology and Society (2)
- BIO 406 Computer Applications in Biology (3)
- BIO 410 Techniques in Conservation Biology & Ecology (3)
- BIO 411 Quantitative Methods in Conservation & Eco (4)
- BIO 417 Experimental Design (3)
- BIO 435 Research Techniques in Animal Behavior (3)
- BIO 456 Bioinformatics and Molecular Evolution (3)
- BIO 469 Computational Neuroscience: (4)
- BIO 489 SOLS: Undergraduate Research Fellow (1)
- BIS 499 Individualized Instruction (1-3)
- BUS 384 Small Business Operations and Planning (3)
- CHM 325 Analytical Chemistry (3)
- CHM 326 Advanced Analytical Chemistry Lab (1)
- CHM 327 Instrumental Analysis (3)
- CHM 328 Instrumental Analysis lab (1)
- CHM 392 Intro to Research Techniques (1-3)
- CIS 105 Computer Applications and Information Tech (3)
- CIS 235 Intro to Information Systems (3)
- CIS 308 Advanced Excel in Business (3)
- CIS 315 Intro to Business Data Analytics (3)
- CIS 340 Business Information System Development I (3)
- CIS 345 Business Information System Development II (3)
- CIS 355 Business Data Warehouses & Dimension Model (3)
- CIS 360 Business Data Concepts (3)
- CIS 365 Business Data Systems Development (3)
- CIS 375 Business Data Mining (3)
- CIS 415 Big Data Analytics & Visualization in Business (3)
- CIS 430 Networks and Distributed Systems (3)
- CIS 440 Systems Design and Electronic Commerce (3)
- CIS 450 Enterprise Analytics (3)
- COM 308 Adv. Research Methods in Communication (3)
- COM 407 Adv. Critical Methods in Communication (3)
- COM 408 Quantitative Research Methods in COM (3)
- CPI 101 Intro to Informatics (3)
- CSE 100 Principles of Programming with C++ (3)
- CSE 110 Principles of Programming (3)
- CSM 402 Assessment & Eval of Community Services (3)
- ECS 316 Assessment/Evidence-based Practices (3)
- EDS 302 Design Inquiry & Undergraduate Research (3)
- ENG 390 Methods of Inquiry (3)
- FAS 361 Research Methods (3)
- FAS 390 Supervised Research Experience (1 – 3)
- FMS 300 Television and Cultural Studies (3)
- GCU 351 Population Geography (3)
- GLG 362 Geomorphology (3)
- GLG 410 Computers in Geology (3)
- GLG 451 Field Geology I (3)
- GLG 452 Field Geology II (3)
- GLG 455 Advanced Field Geology (3-4)
- GLG 489 Field Geochemistry (3)
- GPH 409 Synoptic Meteorology I (4)
- GPH 410 Synoptic Meteorology II (4)
- GPH 491 Geographic Field Methods (3)
- HCR 301 Research Methods Health Care Professionals (3)
- HCR 400 Evidence Based Practice Health Professionals (3)
- HST 300 Historical Inquiry (3)
- HST 495 Methods of Historical Inquiry (3)
- JUS 301 Research in Justice Studies (3)
- PAF 302 Public Service Research Methods (3)
- PHI 333 Symbolic Logic (3)
- PHI 413 Adv. Symbolic Logic (3)
- PHY 111 General Physics (3)
- PHY 112 General Physics (3)
- PHY 113 General Physics Lab (1)
- PHY 114 General Physics Lab (1)
- PHY 334 Advanced Laboratory I (3)
- PHY 465 Advanced Laboratory II (3)
- PHY 472 Advanced Biophysics Lab (3)
- PLB 432 Computer Applications in Biology (3)
- POS 301 Empirical Political Inquiry (3)
- PSY 244 Introduction to Directed Child Study (3)
- PSY 290 Research Methods (4)
- PSY 304 Effective Thinking (3)
- PSY 390 Experimental Psychology (3)
- PSY 471 Psychological Testing (3)
- PUP 361 Planning Workshop (4)
- PUP 462 Planning Workshop II (4)
- SCM 314 Analytics for Logistics (3)
- SCM 345 Logistics Management (3)
- SCM 432 Planning & Control Systems for SCM (3)
- SCN 307 Learning from Nature: Biomimicry & STEM (3)
- SES 100 Intro to Exploration (3)
- SES 330 Practical Electronics and Instrumentation (4)
- SES 350 Engineering Systems & Exp. Problem Solving (3)
- SES 405 Exploration Systems Engineering (3)

SGS 305 Research Methods (3)  
SOC 333 Population (3)  
SOC 391 Research Methods (3)  
SOC 433 Applied Demographic (3)  
SPA 422 Spanish Lexicology & Lexicography (3)  
STP 310 Design & Analysis of Experiments (3)  
STS 301 Research in Science and Technology Studies (3)  
TEL 430 Learning Outside of School (3)  
TEL 431 Learning in Workplaces (3)

### **Technical and Professional Communication**

AME 112 Computational Thinking for Digital Culture (3)  
AME 194 Form, Aesthetics & Comp. Media Arts (1-4)  
AML 330 Social Simulation (4)  
ART 116 Intro to Digital Media (3)  
BIO 315 Science, Values, and the Public (3)  
COM 250 Intro to Organizational Communication (3)  
COM 259 Communication in Business & the Professions (3)  
COM 459 Theory & Methods of Social Media Networks (3)  
CPI 111 Game Development (3)  
EDS 200 Design Literacy & Communication (3)  
ENG 301 Writing for the Professions (3)  
ENG 370 Science, Values and the Public (3)  
ENG 483 Method of Teaching Secondary Lit & Language (3)  
ENG 485 Digital Tools (3)  
FMP 255 Media Authorship (3)  
FMS 351 Emerging Digital Media (3)  
GIT 135 Graphic Communication  
GIT 210 Creative Thinking & Design Visualization (3)  
GIT 303 Digital Publishing (3)  
GIT 312 3-D Computer Graphics Modeling & Rep. (3)  
GLG 410 Computers in Geology (3)  
GRA 345 Design Rhetoric (3)  
HCR 406 Health Literacy for Healthcare Professionals (3)  
IAP 361 Digital Editing & Media Literacy (3)  
IND 228 Imaging and Visualization (3)  
MHL 201 Media Literacy for Musicians (3)  
MTE 250 Technology & Mathematical Visualization (3)  
TWC 301 Fundamentals of Writing for Digital Media (3)  
TWC 347 Written Communication for Managers (3)  
TWC 411 Principles of Visual Communication (3)  
TWC 414 Visualizing Data and Information (3)  
UNI 110 Critical Reading and Thinking (3)

### **Capstone**

AML 406 Directed Reading & Research in App Math (3)  
ARS 498 Pro-Seminar (1 – 7)  
ASB 452 Community partnerships for Global Health (3 – 9)  
ASM 414 Urban & Environmental Health (3)  
BIO 310 Special Problems & Techniques (1-3)  
BIO 389 SOLS Undergraduate Researcher (1)

BIS 484 Internship (1-12)  
CSS 499 Individualized Instruction (1-3)  
FAS 390 Supervised Research Experience (1-3)  
FAS 460 Leadership, Research & Collaboration Comm. (3)  
FAS 461 Community Action Research Exp Internship (3)  
FIN 461 Financial Cases & Modeling (3)  
FIN 494 Special Topic (1-4)  
GIS 472 Spatial Regression Analysis (3)  
GIT 480 Senior Project (3)  
GLG 464 Solving Environmental Problems (3)  
GLG 495 Undergraduate Thesis (3)  
HON 492 Honors Directed Study (1-6)  
HON 493 Honors Thesis (1-6)  
HRC 480 Capstone: Practices & Approaches (3)  
MBB 490 Capstone: Issues in Biotechnology (2)  
MBB 491 Capstone: Issues in Molecular Science (2)  
PSY 399 Supervised Research (1-3)  
PSY 477 Applied Capstone Experience (3)  
SES 410 Senior Exploration Project I (3)  
SES 411 Senior Exploration Project II (3)  
SSH 402 Community Partnerships for Global Health (3)  
SSH 414 Urban and Environmental Health (3)  
TCL 305 Transborder Practicum and Field Research (3)  
USL 496 Service Learning Capstone (3)