

# **Arizona State University**

## Academic Catalog Archive

### 2011-2012

This document provides an archival record of the academic programs offered during the 2011-2012 academic year. It is a printable option of the online catalog for accreditation organizations, agencies and university offices for data collection, evaluation purposes and referencing. Academic advisors, faculty and students should refer to the online version of the academic catalog.

To navigate this document version of the Academic Catalog 2011-12, refer to the Table of Contents and the bookmarks provided. Most undergraduate degrees have a corresponding major map that includes the critical requirements, order of courses and grade requirements for that degree. The major maps are provided in the final sections of this document.

Corrections or additions to the Academic Catalog Archive 2011-12 program information and major maps, as of July 31, 2011, may be provided in a future addendum. For inquiries or questions please contact [academic.catalog@asu.edu](mailto:academic.catalog@asu.edu).



## Table of Contents

ASU Mission, Vision and Values .....	26
ASU Mission .....	26
ASU Goals 2002-2012 .....	26
Institutional Inclusion .....	26
Accreditations .....	27
Functions of the ASU University Accreditation Office .....	27
Professional Accreditation Oversight .....	27
ASU Accreditation Status Letter (2003) .....	28
Accredited Programs and Agencies.....	30
Academic Calendar .....	32
Summer 2011 .....	32
Fall 2011.....	34
Spring 2012.....	36
Tuition and Fees.....	37
Tuition Commitment .....	37
Commitment Tuition Rate.....	37
Commitment Tuition Rate Definitions .....	38
Residency for Tuition Purposes .....	39
General Information.....	39
Deadlines.....	40
Resources .....	40
Tuition and Fee Descriptions .....	41
Tuition Refund Policy.....	42
Tuition and Fees Schedules .....	43
Per Semester Tuition And Fees .....	44
General Tuition and Fees .....	44
University Policies .....	60
Undergraduate Policies and Procedures .....	60
Freshman Admission Requirements and Timelines .....	60
Attendance.....	71
Arizona General Education Curriculum (AGEC).....	71
Course Load and Concurrent Enrollment.....	71
Credit by Examination .....	72
Placement and Testing Requirements .....	79
Retention and Academic Standards.....	80
Academic Integrity .....	81

University Policy for Student Appeal Procedures on Grades .....	87
University Undergraduate General Studies Requirement .....	88
University Undergraduate Graduation Requirements .....	90
<b>Graduate Policies and Procedures.....</b>	<b>96</b>
Introduction .....	99
Application .....	99
Admission.....	103
Registration and Enrollment .....	104
Academic Progress .....	107
Graduate Degree Requirements .....	108
Master's Degree .....	111
Doctorate Degree.....	113
Other Graduate Educational Opportunities.....	117
Research Considerations.....	119
Degree Completion .....	120
Graduate Student Appeals.....	121
<b>College Policies .....</b>	<b>124</b>
Business, W. P. Carey School of.....	124
Design and the Arts, Herberger Institute for.....	125
Engineering, Ira A. Fulton Schools of.....	128
Honors - Barrett, the Honors College .....	133
Journalism and Mass Communication, Walter Cronkite School of.....	134
Law, Sandra Day O'Connor College of.....	135
Letters and Sciences, School of .....	135
Liberal Arts and Sciences, College of.....	137
New College of Interdisciplinary Arts and Sciences Policies.....	142
Nursing and Health Innovation, College of.....	143
Nutrition and Health Promotion, School of.....	146
Public Programs, College of .....	147
Sustainability, School of.....	149
Teachers College, Mary Lou Fulton .....	150
Technology and Innovation, College of .....	153
University College.....	154
<b>Academic Programs .....</b>	<b>156</b>
Concurrent and Joint Degrees .....	156
Accelerated Bachelor's and Master's Programs .....	158
Graduate Programs.....	160

Graduate Degrees and Certificates (Program Descriptions and Requirements).....	160
Business, W. P. Carey School of.....	160
Accountancy, MAcc (BAACCMACC).....	160
Business Administration (Accountancy), PHD (BAACCTPHD).....	160
Business Administration (Computer and Information Systems), PHD (BAINFSYPHD) .....	161
Business Administration (Finance), PHD (BAFINANPHD) .....	162
Business Administration (Management), PHD (BAMGMPHD).....	163
Business Administration (Marketing), PHD (BAMARKPHD) .....	165
Business Administration (Supply Chain Management), PHD (BASCMPHD) .....	166
Economics, PHD (BAECONPHD) .....	167
Information Management, MS (BAINFOMS).....	167
Real Estate Development, MREDev (ARREMREDEV) .....	168
Supply Chain Management (certificate), CERT (BASCMCERT) .....	169
Taxation, MTax (BATAMTAX) .....	169
W. P. Carey MBA, MBA (BACORPMBA).....	170
W. P. Carey MBA, MBA (BAEVEAMBA) .....	170
W. P. Carey MBA, MBA (BAEVENMBA) .....	171
W. P. Carey MBA, MBA (BAEXECMBA).....	172
W. P. Carey MBA, MBA (BAFULLMBA) .....	173
W. P. Carey MBA, MBA (BAONLINMBA) .....	174
W. P. Carey MBA, MBA (BASHANGMBA) .....	175
Design and the Arts, Herberger Institute for.....	176
Architecture, MArch (ARARCMARCH) .....	176
Art (Art Education), MA (FAARTEDMA).....	178
Art (Art History), MA (FAARTHISMA) .....	179
Art (Ceramics), MFA (FACERAMMFA) .....	179
Art (Digital Technology), MFA (FADIGITMFA) .....	180
Art (Drawing), MFA (FADRAWMFA) .....	181
Art (Fibers), MFA (FAFIBERMFA) .....	182
Art (Intermedia), MFA (FAMEDIAMFA) .....	182
Art (Metals), MFA (FAMETALMFA).....	183
Art (Painting), MFA (FAPAINTMFA) .....	184
Art (Photography), MFA (FAPHOTOMFA) .....	185
Art (Printmaking), MFA (FAPRINTMFA).....	186
Art (Sculpture), MFA (FASCULPMFA) .....	187
Art (Wood), MFA (FAWOODMFA) .....	187
Built Environment (Energy Performance & Climate Responsive Architecture), MS (ARENERGYMS) .....	188
Composition, MM (FAMCOMPMM).....	189

Composition (Interdisciplinary Digital Media and Performance), MM (FADIGITMM).....	190
Dance, MFA (FADANCEMFA).....	191
Dance (Interdisciplinary Digital Media and Performance), MFA (FADANDIMFA).....	192
Design (Arts, Media and Engineering), MSD (ARDESAMMSD).....	192
Design (Design of Healthcare and Healing Environments), MSD (ARHHEMSD).....	193
Design (Industrial Design), MSD (ARINDEMSD).....	194
Design (Interaction Design), MSD (ARDSCIMSD).....	195
Design (Interior Design), MSD (ARINTDEMSD).....	196
Design (New Product Innovation), MSD (ARDSCNMSD).....	197
Design (Visual Communication Design), MSD (ARVCDMSD).....	198
Design, Environment and the Arts, PHD (ARENVDEPHD).....	199
Design, Environment and the Arts (Digital Culture in Design), PHD (HIENVDGPHD).....	201
Environmental Design/Planning (Healthcare & Healing Environments), PHD (ARENHHHEPHD).....	202
Landscape Architecture, MLA (ARLDEMLA).....	203
Media Arts and Sciences, PHD (FAMASPHD).....	205
Music (Conducting), DMA (FACONDDMA).....	206
Music (Ethnomusicology), MA (FAETHNMA).....	206
Music (Interdisciplinary Digital Media and Performance), DMA (FAINTDDMA).....	207
Music (Music Composition), DMA (FACOMPDMA).....	207
Music (Music Education), PHD (FAMUSEDPHD).....	208
Music (Music History and Literature), MA (FAMHISTMA).....	209
Music (Performance), DMA (FAPERFDMA).....	210
Music Education, MM (FAMUSEDMM).....	211
Music Therapy, MM (FAMTHERMM).....	211
Music Therapy (Clinical Music Therapy), MM (HICMTMM).....	212
Performance (Collaborative Piano), MM (FACPIANOMM).....	213
Performance (Music Theatre/Opera Performance), MM (FAMUTPOMM).....	213
Performance (Performance Pedagogy), MM (FAPPEDMM).....	214
Performance (Performance), MM (FAPERF3MM).....	215
Theatre, MA (FATHEAMA).....	215
Theatre (Directing), MFA (FADIRMFA).....	216
Theatre (Dramatic Writing), MFA (FADRWRTMFA).....	217
Theatre (Interdisciplinary Digital Media), MFA (FATHEADMFA).....	218
Theatre (Performance), MFA (FAPERFMFA).....	218
Theatre (Performance Design), MFA (FAPERDMFA).....	219
Theatre (Theatre For Youth), MFA (FAYOUTHMFA).....	220
Theatre (Theatre For Youth), PHD (FAYOUTHPHD).....	221
Theatre (Theatre/Performance Americas), PHD (FAPERAMPHD).....	222

Urban Design, MUD (ARMUDMUD) .....	223
Engineering, Ira A. Fulton Schools of.....	224
Aerospace Engineering, MS (ESAEROSPMS) .....	224
Aerospace Engineering, MSE (ESAERSPMSE) .....	225
Aerospace Engineering, PHD (ESAERSPPHD) .....	226
Aerospace Engineering (Engineering Education), PHD (ESAEEEDPHD).....	227
Applied Ethics and the Professions (Ethics and Emerging Technologies), MA (LAAEPEETMA).....	228
Biomedical Engineering, MS (ESBIOENMS) .....	229
Biomedical Engineering, PHD (ESBIOENPHD).....	230
Chemical Engineering, MS (ESCHEMEMS).....	231
Chemical Engineering, MSE (ESCHEMEMSE).....	232
Chemical Engineering, PHD (ESCHEMEPHD) .....	233
Civil, Environmental and Sustainable Engineering, MS (ESCIVILMS).....	235
Civil, Environmental and Sustainable Engineering, MSE (ESCIVILMSE).....	236
Civil, Environmental and Sustainable Engineering, PHD (ESCIVILPHD) .....	236
Computer Engineering (Computer Systems), MS (ESCENCMS).....	237
Computer Engineering (Computer Systems), PHD (ESCENCPHD) .....	238
Computer Engineering (Electrical Engineering), MS (ESCENEMS) .....	239
Computer Engineering (Electrical Engineering), PHD (ESCENEPEHD) .....	240
Computer Science, MCS (ESCOMSCMCS).....	240
Computer Science, MS (ESCOMSCSMS).....	242
Computer Science, PHD (ESCOMSCPHD) .....	243
Computer Science (Arts, Media and Engineering), MS (ESAMECSMS) .....	244
Computer Science (Arts, Media and Engineering), PHD (ESAMECSPHD) .....	245
Computer Science (Information Assurance), MS (ESCSEIAMS).....	246
Computer Science (Information Assurance), PHD (ESCSEIAAPHD) .....	247
Computer Science (Information Assurance), MCS (ESCSEIMCS) .....	248
Computer Sciences (Biomedical Informatics), MS (ESCSBIOIMS) .....	249
Construction Engineering, MSE (ESCONEMSE) .....	251
Construction Management, PHD (ESCONPHD) .....	251
Construction Management, MS (ESCONSTMS).....	252
Electrical Engineering, MS (ESEEMS).....	253
Electrical Engineering, MSE (ESEEMSE).....	254
Electrical Engineering, PHD (ESEEPHD) .....	255
Electrical Engineering (Arts, Media and Engineering), MS (ESAMEMS) .....	256
Electrical Engineering (Arts, Media and Engineering), PHD (ESAMEPHD) .....	256
Engineering, MEng (ESENGRMENG).....	257
Engineering Science (Enterprise Systems Innovation and Management), MSE (ESIEEMSE) .....	258

Engineering Science (Software Engineering), MSE (ESSFEMSE).....	259
Industrial Engineering, MS (ESINDENMS) .....	260
Industrial Engineering, PHD (ESINDENPHD) .....	260
Materials Science and Engineering, PHD (ESENMATPHD) .....	262
Materials Science and Engineering, MS (ESMATEMS) .....	263
Materials Science and Engineering, MSE (ESMATEMSE) .....	264
Mechanical Engineering, MS (ESMEMS) .....	265
Mechanical Engineering, MSE (ESMEMSE) .....	266
Mechanical Engineering, PHD (ESMEPHD).....	267
Mechanical Engineering (Engineering Education), PHD (ESMEEEDPHD) .....	268
Natural Science (Middle School Science, Technology, Engineering and Mathematics), MNS (GCSTMMNS) .....	269
Nuclear Power Generation (certificate), CERT (ESNPGGRCT) .....	269
Solar Energy Engineering and Commercialization, PSM (ESSEECPSM) .....	270
Sustainable Technology and Management (certificate), CERT (SUSUTECHCE).....	271
<b>Graduate College .....</b>	<b>271</b>
Biological Design, PHD (GCBDSPHD) .....	271
Biomedical Informatics, MS (ESBIOINFMS) .....	272
Biomedical Informatics, PHD (ESBMIPH) .....	273
Human and Social Dimensions of Science and Technology, PHD (GCHSDSTPHD) .....	274
Neuroscience, PHD (GCBMENPHD).....	275
Statistics (certificate), CERT (GCSTATCE).....	276
<b>Journalism and Mass Communication, Walter Cronkite School of .....</b>	<b>277</b>
Journalism and Mass Communication, PHD (CSJMCOPHD).....	277
Mass Communication, MMC (CSMCOMMMC) .....	278
<b>Law, Sandra Day O'Connor College of .....</b>	<b>278</b>
Biotechnology and Genomics, LL.M. (LWGENOMLLM).....	278
Indian Law (certificate), CERT (LWLAWGRCI).....	280
Juris Doctor of Law, JD (LWJDJD) .....	280
Law, Science, & Technology (certificate), CERT (LWLAWSTCE).....	282
Laws, LL.M. (LAWLAWSLLM) .....	283
Laws (US Law and Global Legal Practice), LL.M. (LAWLGLPLLM) .....	284
Legal Studies, MLS (LWLGSMLLEGS) .....	285
Tribal Policy, Law and Government, LL.M. (LWTBLMLLAWS) .....	286
<b>Letters and Sciences, School of .....</b>	<b>287</b>
Applied Ethics and the Professions (Science, Technology and Ethics), MA (LAAEPSEEMA) .....	287
Behavioral Health, DBH (LSBEVHEDBH) .....	287
Counseling, MC (EDCOUNMC) .....	288
Counseling Psychology, PHD (EDCPSPYH).....	289

Liberal Arts and Sciences, College of .....	290
African Studies (certificate), CERT (LAAFRICACE).....	290
American Media and Popular Culture, MAS (LAAMPCMAS).....	291
Animal Behavior, PHD (LAANBPHD).....	291
Anthropology, PHD (LAANTHRPHD).....	292
Anthropology (Museum Studies), MA (LAMUSEUMMA) .....	293
Anthropology (Urbanism), PHD (LAURBPHD).....	294
Applied Ethics and the Professions (Biomedical and Health Ethics), MA (LAAEPMEMA) .....	295
Applied Linguistics, PHD (EDAPLPHD) .....	296
Applied Mathematics, PHD (LAAPMPHD) .....	298
Applied Mathematics for the Life & Social Sciences, PHD (LAAMLPHD).....	298
Asian Languages and Civilizations (Chinese), MA (LACHINAMA) .....	300
Asian Languages and Civilizations (Japanese), MA (LAJAPANMA) .....	300
Asian Studies (certificate), CERT (LAASIANCE) .....	301
Astrophysics, MS (LAASTPHMS) .....	301
Astrophysics, PHD (LAASTPHPHD).....	302
Atmospheric Science (certificate), CERT (LAATMOSCE) .....	303
Audiology, AudD (LAAUDAUDD) .....	304
Biochemistry, PHD (LABIOCHPHD) .....	304
Biology, MS (LABIOMS) .....	305
Biology, PHD (LABIOPHD).....	306
Biology (Biology and Society), MS (LABIOSMS).....	306
Biology (Biology and Society), PHD (LABIOSPHD) .....	307
Chemistry, PHD (LACHEMPHD) .....	308
Communication, MA (LACOMMMOMA) .....	310
Communication, PHD (LACOMMOPHD).....	311
Communication Disorders, MS (LACOMDISMS).....	312
Creative Writing, MFA (LACWRITMFA) .....	312
East Asian Languages and Civilizations (Chinese), PHD (LAEALCPHD) .....	313
English, MA (LAENGLMA) .....	314
English (Literature), PHD (LAENLITPHD).....	316
English (Rhetoric, Composition and Linguistics), PHD (LAENRHTPHD) .....	317
Environmental Life Sciences, PHD (LAELSPHD) .....	319
Environmental Social Science, PHD (LAESSPHD).....	319
Environmental Social Science (Urbanism), PHD (LAESSURPHD) .....	321
Evolutionary Biology, PHD (LAEVOPHD).....	322
Exploration Systems Design, PHD (LAESDPHD) .....	323
Exploration Systems Design (Instrumentation), PHD (LAESDIPHID) .....	324

Exploration Systems Design (Sensor Networks), PHD (LAESDSNPHD).....	324
Exploration Systems Design (Systems Engineering), PHD (LAESDSEPHD).....	325
Family and Human Development, MS (LAFAMHDMS).....	326
Family and Human Development, PHD (LAFAMSCPHD) .....	327
French (Comparative Literature), MA (LAFRECLMA) .....	328
French (Linguistics), MA (LAFRELINMA).....	329
French (Literature), MA (LAFRELITMA) .....	329
Gender Studies, PHD (LAGSTPHD).....	330
Gender Studies (certificate), CERT (LAWSTGRCT) .....	331
Geographic Education, MAS (LAGEOEDMAS) .....	332
Geographic Information Science (certificate), CERT (LAGEOGISCE).....	333
Geographic Information Systems, MAS (LAGISMAS) .....	333
Geography, MA (LAGEOGMA).....	334
Geography, PHD (LAGEOGPHD) .....	334
Geological Sciences, MS (LAGEOSCAMS).....	335
Geological Sciences, PHD (LAGEOSCPHD) .....	336
German, MA (LAGERMMA).....	337
Global Health, MA (LASSHMA) .....	337
Global Health, PHD (LASSPHD) .....	339
Global Health (Culture and Health), PHD (LASSCHPHD) .....	340
Global Health (Evolutionary Global Health Sciences), PHD (LASSHEPHD) .....	342
Global Health (Urbanism), PHD (LASSHURPHD).....	342
History, MA (LAHISTMA) .....	344
History, PHD (LAHISTPHD).....	345
Immigration Studies (certificate), CERT (LAIMMSTUCE) .....	347
Infant Family Practice, MAS (LACDEMAS) .....	348
Justice Studies, MS (LAJUSSTMS) .....	349
Justice Studies, PHD (LAJUSSTPHD).....	350
Liberal Studies, MLSt (LAMLSMLS) .....	351
Liberal Studies (Film and Media Studies), MLSt (LAFMSMLS) .....	352
Linguistics (certificate), CERT (LALINGUICE).....	352
Marriage and Family Therapy, MAS (LAMFTMAS) .....	354
Mathematics, MA (LAMATHMA).....	354
Mathematics, PHD (LAMATHPHD) .....	355
Mathematics Education, PHD (LAMTEPHD) .....	356
Medieval Studies (certificate), CERT (LAMEDSTCE) .....	357
Microbiology, MS (LAMICROMS) .....	357
Microbiology, PHD (LAMICROPHD) .....	358

Molecular and Cellular Biology, MS (LACELLMS)	358
Molecular and Cellular Biology, PHD (LACELPHD)	359
Museum Studies (certificate), CERT (LAMUSEUMCE)	360
NanoScience, PSM (LANANPSM)	361
Natural Science (Geological Sciences), MNS (LANATSCIMN)	362
Natural Science (Physics), MNS (LAPHYSMNS)	363
Philosophy, MA (LAPHILMA)	363
Philosophy, PHD (LAPHILPHD)	365
Philosophy (History and Philosophy of Science), MA (LAHPSMA)	366
Philosophy (History and Philosophy of Science), PHD (LAHPSPHD)	366
Physics, MS (LAPHYSIMS)	367
Physics, PHD (LAPHYSIPHD)	368
Plant Biology, MS (LAPLBIOMS)	369
Plant Biology, PHD (LAPLBIOPHD)	370
Political Science, MA (LAPOLSCMA)	371
Political Science, PHD (LAPOLCPHD)	372
Psychology, PHD (LAPSYCHPHD)	373
Psychology (Quantitative Research Methods), PHD (LAPSQUPHD)	374
Religious Studies, MA (LARELIGMA)	375
Religious Studies, PHD (LARELIGPHD)	377
Renaissance Studies (certificate), CERT (LAREN AISCE)	378
Scholarly Publishing (certificate), CERT (LASCHPUBCE)	378
Science and Technology Policy, PSM (LAHSDPSM)	379
Socio-Economic Justice (certificate), CERT (LAECJUGRCT)	380
Sociology, MA (LASOCMA)	381
Sociology, PHD (LASOCPHD)	382
Spanish, MA (LSPANMA)	383
Spanish, PHD (LSPANPHD)	383
Speech and Hearing Science, PHD (LAHEARPHD)	384
Statistics, MS (GCSTATMS)	385
Statistics, PHD (LASTPPHD)	386
Teaching English as a Second Language, MTE Speake (LAENGMTESL)	387
Transborder Studies, MAS (LATCLMAS)	388
Transportation Systems (certificate), CERT (GCTRANSCE)	388
Urban and Environmental Planning, MU/EP (ARURBMUEP)	389
New College of Interdisciplinary Arts and Sciences	391
Communication Studies, MA (ASCOMSTMA)	391
Interdisciplinary Studies, MA (ASINTERMA)	392

Psychology, MS (ASPGSMS) .....	393
Social Justice and Human Rights, MA (ASJHRMA).....	394
<b>Nursing and Health Innovation, College of.....</b>	<b>396</b>
Advanced Nursing Practice, DNP (NUANPDNP) .....	396
Advanced Nursing Practice (Geriatric Nurse Practitioner), DNP (NUGNPDNP) .....	396
Advanced Nursing Practice (Adult Nurse Practitioner), DNP (NUANPADDNP) .....	397
Advanced Nursing Practice (Adult Psychiatric Mental Health Nurse Practitioner), DNP (NUANPPMDNP) .....	398
Advanced Nursing Practice (Child/Family Psychiatric Mental Health Nurse Practitioner), DNP (NUANPCFDNP) .....	399
Advanced Nursing Practice (Family Nurse Practitioner), DNP (NUANPFNDNP).....	400
Advanced Nursing Practice (Neonatal Nurse Practitioner), DNP (NUANPNDNP) .....	400
Advanced Nursing Practice (Pediatric Nurse Practitioner), DNP (NUANPPDNP) .....	401
Adv Nursing Practice (Women's Health NP), DNP (NUANPWHDNP) .....	402
Child and Adolescent Mental Health Intervention (certificate), CERT (NUCAMHICE) .....	402
Child/Family Mental Health Nurse Practitioner (certificate), CERT (NUPMNUPRCE) .....	403
Clinical Research Management, MS (NUCRMMS).....	404
Clinical Research Management (certificate), CERT (NUHCRGRCC) .....	404
Community and Public Health Practice (certificate), CERT (NUCHPGRCH) .....	405
Evidence-Based Practice in Nursing and Healthcare (certificate), CERT (NUEVIDNSCE).....	405
Family Nurse Practitioner (certificate), CERT (NUFMPGRCE).....	406
Geriatric Nursing (certificate), CERT (NUGCNCERT) .....	407
Healthcare Innovation, MHI (NUHCINNMHI) .....	407
International Health for Healthcare Professionals (certificate), CERT (NUHCRGRCI) .....	408
Nurse Education in Academic and Practice Settings (certificate), CERT (NUNURSEDCE) .....	408
Nursing (Community Health Advanced Practice Nursing), MS (NUCHNDTMS) .....	409
Nursing (Nursing Education), MS (NUNURSEDMS) .....	410
Nursing and Healthcare Innovation, PHD (NUNHIPHD) .....	410
Regulatory Science and Health Safety, MS (NURSHSMS).....	411
<b>Nutrition and Health Promotion, School of.....</b>	<b>412</b>
Exercise and Wellness, MS (ECEXERMS) .....	412
Nutrition, MS (ECHNUTMS).....	412
Nutrition (Dietetics), MS (ECNTRDMS).....	413
Physical Activity, Nutrition and Wellness, PHD (ECNUTRIPHDI) .....	414
<b>Public Programs, College of .....</b>	<b>416</b>
Applied Ethics and the Professions (Leadership, Management, and Ethics), MA (LAAEPLMEMA) .....	416
Assessment of Integrative Health Modalities (certificate), CERT (PPSWGGRCH) .....	416
Community Resources and Development, PHD (PPCRDPHD) .....	417
Criminal Justice, MA (PPCRIMJMA).....	418
Criminology and Criminal Justice, MS (PPCRJMS) .....	419

Criminology and Criminal Justice, PHD (PPCRJPHD) .....	421
Latino Cultural Competency in Social Work (certificate), CERT (PPSWGGRCL).....	422
Nonprofit Leadership and Management (certificate), CERT (PPNONPROCE) .....	423
Nonprofit Studies, MNPS (PPNPSMNS).....	423
Public Administration, MPA (PPPADTMPA) .....	424
Public Administration, PHD (PPPUBADPHD) .....	425
Public Administration (Nonprofit Administration), MPA (PPNONPRMPA) .....	427
Public Administration (Urban Management), MPA (PPAFUMPA) .....	428
Public Administration (Urbanism), PHD (PPAURBPHD).....	429
Public Policy, MPP (PPPUBPMPP) .....	430
Recreation and Tourism Studies, MS (PPRECDTMS) .....	431
Social Work, PHD (PPSW2PHD) .....	433
Social Work, MSW (PPSWDMSW) .....	434
Social Work - Advanced Standing, MSW (PPASWMSW) .....	436
Social Work (Advanced Direct Practice), MSW (PPAPDTMSW) .....	436
Social Work (Planning, Administration and Community Practice), MSW (PPCPDTMSW).....	438
Trauma and Bereavement (certificate), CERT (HSCTBGRCT) .....	439
<b>Sustainability, School of.....</b>	<b>440</b>
Global Sustainability Leadership (certificate), CERT (SUSUSGGRCT).....	440
Sustainability, MA (SUSUSTMA) .....	440
Sustainability, MS (SUSUSTMS) .....	441
Sustainability, PHD (SUSUSTPHD) .....	443
<b>Teachers College, Mary Lou Fulton .....</b>	<b>444</b>
An Overview of Autism Spectrum Disorders (certificate), CERT (EDSPEGRCA).....	444
Curriculum and Instruction (Accomplished Teaching), MA (EDACCTCMA).....	444
Curriculum and Instruction (Early Childhood Education), MEd (TEECDMED) .....	445
Curriculum and Instruction (English as a Second Language), MA (EDESLMA) .....	446
Curriculum and Instruction (Language and Literacy), MA (EDLANGMA) .....	446
Curriculum and Instruction (Mathematics Education), MA (EDMATHMA) .....	447
Curriculum and Instruction (Teaching and Learning), MEd (EDDCIMED).....	448
Educational Administration and Supervision, MEd (EDSUPVMED).....	448
Educational Administration and Supervision (Principalship), MEd (TEPRINMED) .....	449
Educational Administration and Supervision (Supervision), MEd (TESPRVIMED).....	450
Educational Leadership and Policy Studies, PHD (EDLDRSHPHD) .....	450
Educational Technology, MEd (EDTECHMED) .....	451
Educational Technology, PHD (EDTECHPHD) .....	452
Elementary Education, MEd (TEELEMMED) .....	453
Elementary Education (Educational Technology), MEd (TEEDTECMED).....	453

Elementary Education (Reading), MEd (TERDGMED) .....	454
Elementary Education (Teacher Certification Accelerated), MEd (TEEEACLMED).....	455
Higher and Postsecondary Education, MEd (EDPOSTMED) .....	455
Instructional Design and Performance Improvement (certificate), CERT (EDEDTGRCT) .....	456
Leadership and Innovation (Policy and Administration), EdD (TEINNPAEDD) .....	456
Leadership and Innovation (Teaching), EdD (TEINNTEEDD).....	457
Online Teaching for Grades K-12 (certificate), CERT (TEEDTGRCT).....	458
Physical Education, MPE (ECPHYEDMPE).....	458
Secondary Education (Educational Technology), MEd (TESEDTCMED).....	459
Secondary Education (Reading), MEd (TESERDGMED) .....	459
Secondary Education (Teacher Certification), MEd (TESCERTMED).....	460
Special Education (Teacher Certification), MEd (TESECRTMED) .....	460
Technology for Teaching and Learning (certificate), CERT (EDEDTTGRCT) .....	461
<b>Technology and Innovation, College of .....</b>	<b>462</b>
Agribusiness, MS (AGAGRIBMS).....	462
Applied Biological Sciences, MS (TSAPBIOSMS) .....	463
Applied Psychology, MS (ECAPSYCHMS) .....	464
Business Administration (Agribusiness), PHD (BAAGRIPHHD).....	464
Computing Studies, MCSt (TSCOMPMCST) .....	466
Simulation, Modeling, and Applied Cognitive Science, PHD (TSSMACSPHD).....	467
Technology (Alternative Energy Technologies), MSTech (TSATMSTECH) .....	468
Technology (Aviation Management and Human Factors), MSTech (TSHFMSTECH).....	468
Technology (Electronic Systems Engineering Technology), MSTech (TSSYMSTECH) .....	470
Technology (Environmental Technology Management), MSTech (TSMGMSTECH).....	471
Technology (Global Technology and Development), MSTech (TSGTMSTECH) .....	472
Technology (Graphic Information Technology), MSTech (TSGIMSTECH).....	473
Technology (Integrated Electronic Systems), MSTech (TSESMSTECH).....	474
Technology (Management of Technology), MSTech (TSMRMSTECH) .....	475
Technology (Manufacturing Engineering Technology), MSTech (TSMFMSTECH).....	476
Technology (Mechanical Engineering Technology), MSTech (TSMHMSTECH) .....	477
<b>Undergraduate Programs .....</b>	<b>480</b>
<b>Minors (Program Descriptions and Requirements).....</b>	<b>480</b>
African and African American Studies Minor (LAAFRMIN).....	480
American Indian Studies Minor (LAAISMIN) .....	480
American Studies Minor (ASAMSMIN) .....	481
Anthropology Minor (LAASBMIN) .....	482
Applied Biological Sciences Minor (TSABSMIN) .....	482
Applied Psychology Minor (ECPSYMIN) .....	483

Arabic Studies Minor (LAARBMIN) .....	484
Architectural Studies Minor (ARSTDMIN) .....	484
Art History Minor (FAARTHMIN) .....	485
Asian Languages (Chinese) Minor (LACHIMIN) .....	486
Asian Languages (Japanese) Minor (LAJPNMIN) .....	487
Asian Pacific American Studies Minor (AAPAMIN) .....	487
Astronomy Minor (LAASTMIN).....	489
Astrophysics Minor (LAASTPHMIN).....	489
Biochemistry Minor (LABCHMIN).....	490
Biological Sciences Minor (LABIOMIN).....	491
Business Minor (BABUSMIN).....	492
Chemistry Minor (ASCHMMIN) .....	493
Chemistry Minor (LACHMMIN) .....	494
Communication Minor (HSCMNMN).....	495
Communication Minor (LACOMMIN).....	495
Computational Mathematical Sciences Minor (LACMSMIN) .....	496
Criminology and Criminal Justice Minor (PPCRJMIN).....	496
Dance Minor (FADANMIN) .....	497
Design Studies Minor (ARDSNMIN).....	499
Digital Culture Minor (HIDGCMIN) .....	500
Economics Minor (LAECNMIN).....	501
Economics for Students Planning a Career in Law Minor (LAECNLMIN) .....	501
English Minor (ASENGMIN) .....	502
English Minor (LSENGMIN).....	503
English Minor with a Concentration in Linguistics Minor (LAENGMINN) .....	503
English Minor with a Concentration in Literature Minor (LAENGMINT) .....	504
Ethnic Studies Minor (ASETHMIN) .....	504
Family and Human Development Minor (LAFASMIN) .....	505
Film and Media Production Minor (FAFMPMIN).....	506
Film and Media Studies Minor (LAFMSMIN).....	506
Food and Nutrition Management Minor (ECFNTRMIN).....	507
French Minor (LAFREMIN).....	508
Geography Minor (LAGCUMIN).....	508
Geological Sciences Minor (LAGLGMIN) .....	509
German Minor (LAGERMIN).....	509
Global Health Minor (LASSHMIN) .....	510
Global Studies Minor (LASGSMIN) .....	510
History Minor (ASHISMIN).....	511

History Minor (LAHISMIN).....	512
History Minor (LSHISMIN) .....	512
Human Nutrition Minor (ECNTRMIN) .....	513
Interdisciplinary Organizational Studies Minor (ASIOSMIN).....	513
Interior Design History Minor (ARINTMIN) .....	514
Italian Minor (LAITAMIN) .....	515
Justice Studies Minor (LAJUSMIN) .....	516
Kinesiology Minor (LAKINMIN).....	516
Landscape Architecture Studies Minor (ARLNDMIN).....	517
Life Sciences Minor (ASLSCMIN) .....	518
Materials Science and Engineering Minor (ESMSEMIN) .....	518
Mathematics Minor (ASMATHMIN).....	519
Mathematics Minor (LAMATMIN).....	520
Media Analysis Minor (CSCMOMINA).....	520
Military Leadership Minor (LAMISMIN) .....	521
Music Minor (FAMUSMIN).....	522
Nonprofit Administration Minor (PPNLMMIN) .....	523
Nutrition and Healthy Living Minor (NUNHLMIN).....	524
Parks and Protected Area Management Minor (PPPRMMINT) .....	525
Philosophy Minor (ASPHIMIN) .....	526
Philosophy Minor (LAPHIMIN) .....	526
Physics Minor (LAPHYMIN) .....	527
Political Science Minor (ASPOLMIN) .....	528
Political Science Minor (LAPOSMIN) .....	529
Psychology Minor (ASPGSMIN) .....	529
Psychology Minor (LAPGSMIN) .....	530
Public Relations and Strategic Communications Minor (HSPRSMIN).....	531
Public Service and Public Policy Minor (PPPAPMIN) .....	532
Real Estate Minor (BAREAMIN).....	532
Recreation Management Minor (PPRECMIN) .....	533
Religious Studies Minor (ASRELMIN).....	534
Religious Studies Minor (LARELMIN).....	535
Romanian Minor (LAROMMIN) .....	535
Russian Minor (LARUSMIN).....	536
Science, Technology and Society Minor (ECSTSMIN).....	536
Slavic Studies Minor (LASLVMIN) .....	537
Small Business Minor (AGSMBMIN).....	538
Social and Behavioral Sciences Minor (ASSBSMIN).....	538

Social Welfare Minor (LASSWMIN) .....	539
Sociocultural Anthropology Minor (ASASBMIN) .....	540
Sociology Minor (ASSOCMIN).....	541
Sociology Minor (LASOCMIN).....	542
Spanish Minor (ASSPAMIN).....	542
Spanish Minor (LASPAMIN).....	543
Spanish Minor (LSSPAMIN) .....	544
Special Events Management Minor (HSEVNMIN) .....	544
Speech and Hearing Science Minor (LASHSMIN) .....	545
Statistics Minor (LASTAMIN) .....	546
Sustainability Minor (SUSUSMIN) .....	547
Sustainable Tourism Minor (PPTDMSMIN) .....	547
Theatre Minor (FATHEMIN) .....	548
Tourism Development and Management Minor (PPTDMMIN) .....	549
Transborder Chicana/o and Latina/o Studies Minor (LACCSMIN).....	550
Urban and Metropolitan Studies Minor (PPURBMIN).....	550
Urban Planning Minor (ARPUPMIN).....	551
Wellness Foundations Minor (ECEXWMIN) .....	552
Women and Gender Studies Minor (LAWSTMIN) .....	553
Women's Studies Minor (ASWSTMIN) .....	554
Youth Services Leadership Minor (HSYSLMIN).....	554
<b>Undergraduate Programs .....</b>	<b>556</b>
Undergraduate Certificates (Program Descriptions and Requirements) .....	556
African and American Studies Certificate (LAAFRCERT).....	556
Arabic Studies Certificate (LAARBCERT) .....	556
Asian Pacific American Studies Certificate (LAAPACERT) .....	557
Asian Studies Certificate (LAASNCERT) .....	558
Automotive Entrepreneurs and Leaders Certificate (BADMGCERT) .....	559
Child Life Certificate (LACHLFCERT).....	560
Child Nutrition Certificate (ECNTRCERC).....	561
Civic Education Certificate (LACVECERT).....	561
Classical Studies Certificate (LACLGCERT) .....	562
Computer Gaming Certificate (ESSCICERT) .....	563
Convention Sales and Meeting Planning Certificate (PPTDMCERT) .....	564
Creative City Certificate (PPURBCERC).....	564
Dietetics Certificate (ECNTRCERD) .....	566
Digital Culture Certificate (HIDGCCERT) .....	567
East Asian Studies Certificate (LAEASCERT) .....	567

Economic Justice Certificate (LAECNJCERT) .....	568
Entertainment and Technology Certificate (LAFMSUERE) .....	570
Environmental Humanities Certificate (LAENHCERT).....	571
Ethics Certificate (LAETHCERT).....	571
Ethnic Studies Certificate (ASETHCERT) .....	572
Family Communication Certificate (ASFAMCCERT).....	572
Film and Video Studies Certificate (ASVIDCERT).....	574
Geographic Information Science Certificate (LAGISCERT).....	574
Hazardous Materials and Waste Management Certificate (TSETMCERT).....	575
History and Philosophy of Science Certificate (LAHPSCERT).....	575
Honors Business Consulting Certificate (BAECNUERT).....	576
Human Rights Certificate (LAHRTSCERT).....	577
Informatics Certificate (ESCPICERT) .....	578
International Business Studies Certificate (BAIBSCERT).....	579
International Studies Certificate (LAINSCERT) .....	581
Islamic Studies Certificate (LAISLCERT) .....	582
Jewish Studies Certificate (LAJUDCERT) .....	582
Knowledge Entrepreneurship and Innovation Certificate (BAKEICERT).....	583
Korean Studies Certificate (LAKORCERT) .....	584
Latin American Studies Certificate (LALASCERT).....	584
Leadership and Ethics Certificate (PPLDECERT) .....	585
Lesbian, Gay, Bisexual, and Transgender Studies Certificate (PPLGBTCERT) .....	586
Medieval Studies Certificate (LAMRSCERT).....	586
Nonprofit Youth/Human Service Leadership/Management awarded thru American Humanics Inc Certificate (PPNPYCERT)....	587
Oral History Certificate (ASOHCCERT).....	588
Philosophy, Politics, and Law Certificate (HOPPLCERT) .....	589
Philosophy, Rhetoric and Literature Certificate (ASPRLCERT).....	589
Public Administration and Public Management Certificate (PPPAFCERT) .....	591
Religion and Conflict Certificate (LARELCERT).....	592
Russian and East European Studies Certificate (LAREECERT).....	593
Small Business and Entrepreneurship Certificate (BASMBCERT) .....	593
Socio-Legal Studies Certificate (LASLSTCERT) .....	594
Southeast Asian Studies Certificate (LASALCERT) .....	594
Spanish for the Professions Certificate (LSSPPRFCER) .....	595
Special Events Management Certificate (HSRTMUERT) .....	595
Speech-Language Pathology Assistant Certificate (LASLPACERT) .....	596
Symbolic Systems Certificate (LAPHICERT) .....	597
Technical Communication Certificate (LSTECCERT) .....	597

Technical Communication, Post Baccalaureate Certificate (LSTECGRCT) .....	598
Technology Entrepreneurship Certificate (ESTNECERT).....	598
Translation Certificate (LASPACERT) .....	599
Women and Gender Studies Certificate (LAWSTCERT).....	600
Women's Studies Certificate (ASWSTCERT) .....	600
Writing Certificate (LAENGCERT) .....	601
Writing Program Certificate (ASWRTCERT) .....	601
<b>Undergraduate Programs .....</b>	<b>603</b>
<b>Undergraduate Degrees (Program Descriptions) .....</b>	<b>603</b>
Business, W. P. Carey School of.....	603
Accountancy, BS (BAACCBS).....	603
Business (Communication), BA (BABUSCBA).....	604
Business (Global Politics), BA (BABUSGPBA).....	604
Business (Law), BA (BABUSLBA) .....	605
Business (Public Service and Public Policy), BA (BABUSPBA) .....	606
Business (Sustainability), BA (BABUSSBA) .....	606
Business (Tourism), BA (BABUSTBA) .....	607
Business (Urban Policy), BA (BABUSUBA) .....	608
Business Exploratory, Pre-Prof/E (BABUSEXP) .....	609
Computer Information Systems, BS (BACISBS) .....	609
Economics, BS (BAECNBS) .....	611
Finance, BS (BAFINBS) .....	612
Management, BS (BAMGTBS) .....	613
Management (Entrepreneurship), BS (BAMGTEBS) .....	614
Marketing, BS (BAMKTBS) .....	615
Supply Chain Management, BS (BASCMB) .....	616
Design and the Arts, Herberger Institute for.....	617
Architectural Studies, BSD (ARSTDBSD) .....	617
Art (Art Education), BFA (FAARTEBFA) .....	618
Art (Art History), BA (FAARTHBA).....	619
Art (Art Studies), BA (FAARTSTDBA).....	619
Art (Ceramics), BFA (FAARTCBFA) .....	620
Art (Drawing), BFA (FAARTDBFA) .....	621
Art (Fibers), BFA (FAARTFBFA) .....	622
Art (Intermedia), BFA (FAARTIBFA) .....	623
Art (Metals), BFA (FAARTMBFA).....	623
Art (Museum Studies), BA (FAARTMSBA) .....	625
Art (Painting), BFA (FAARTPABFA) .....	626

Art (Photography), BFA (FAARTPHBFA).....	627
Art (Printmaking), BFA (FAARTPMBFA) .....	627
Art (Sculpture), BFA (FAARTSBFA).....	628
Arts (BA in the Arts), BA (FAATSBA) .....	629
Dance, BFA (FADANBFA) .....	630
Dance (Dance Education), BFA (FADANEGBFA) .....	631
Design Studies, BA (ARDSNBA).....	632
Design Studies (Design Management), BA (ARDNSNMB).....	633
Film (Film & Media Production), BA (FAFLMBA).....	634
Film (Filmmaking Practices), BA (FAFPRBA) .....	634
Graphic Design, BSD (ARGRABSD) .....	635
Industrial Design, BSD (ARINDBSD) .....	636
Interior Design, BSD (ARINTBSD).....	636
Landscape Architecture, BSLA (ARPLABSLA) .....	637
Music, BA (FAMUSBA) .....	638
Music Education (Choral-General), BMus (FAMUSCBMUS).....	639
Music Education (Instrumental), BMus (FAMUSIIBM) .....	640
Music Education (String), BMus (FAMUSISBM).....	641
Music Therapy, BMus (FAMUSTHBM).....	641
Performance (Collaborative Piano), BMus (FAMUSPPBM) .....	643
Performance (Guitar), BMus (FAMUSPGBM) .....	644
Performance (Jazz), BMus (FAMUSPJBM) .....	644
Performance (Keyboard), BMus (FAMUSPKBM) .....	646
Performance (Music Theatre), BMus (FAMUSPMBM) .....	646
Performance (Orchestral Instrument), BMus (FAMUSPOBM) .....	647
Performance (Voice), BMus (FAMUSPVBM) .....	648
Theatre, BA (FATHEBA) .....	649
Theatre (Acting), BA (FATHEABA).....	650
Theatre (Design & Production), BA (FADSNPRBA) .....	651
Theory & Composition (Composition), BMus (FAMUSTCBM).....	652
Theory & Composition (Theory), BMus (FAMUSTTB) .....	653
Engineering, Ira A. Fulton Schools of.....	654
Aerospace Engineering (Aeronautics), BSE (ESAEROBSE) .....	654
Aerospace Engineering (Astronautics), BSE (ESAEASBSE) .....	655
Biomedical Engineering, BSE (ESBMEBSE) .....	656
Chemical Engineering, BSE (ESCHEBSE) .....	658
Civil Engineering, BSE (ESCEEVBSE) .....	659
Civil Engineering (Construction Engineering), BSE (ESCEECBSE) .....	660

Civil Engineering (Environmental Engineering), BSE (ESCEEVBSE) .....	662
Civil Engineering (Sustainable Engineering), BSE (ESCEESUBSE) .....	663
Computer Science, BS (ESCSEBS) .....	665
Computer Science (Information Assurance), BS (ESCSEIBS).....	666
Computer Science (Software Engineering), BS (ESCSESBS).....	668
Computer Systems Engineering, BSE (ESCSEBSE).....	669
Computer Systems Engineering (Information Assurance), BSE (ESCSEIBSE).....	671
Construction Engineering, BSE (ESCONBSE).....	672
Construction Management (Concrete Industry Management), BS (ESCONIMBS).....	673
Construction Management (General Building Construction), BS (ESCONGBS) .....	674
Construction Management (Heavy Construction), BS (ESCONHBS).....	675
Construction Management (Residential Construction), BS (ESCONRBS) .....	677
Construction Management (Specialty Construction), BS (ESCONSBS) .....	678
Electrical Engineering, BSE (ESEEEBSE) .....	679
Electrical Engineering (Electric Power and Energy Systems), BSE (ESEEPBSE) .....	680
Engineering Management, BSE (ESEMGBSE) .....	682
Engineering Special Studies (Premedical Engineering), BSE (ESESPPBSE).....	682
Industrial Engineering, BSE (ESIEEBSE).....	684
Informatics, BS (ESCPIBS) .....	685
Materials Science & Engineering, BSE (ESMSEBSE).....	686
Mechanical Engineering, BSE (ESMAEMBSE) .....	687
Mechanical Engineering (Computational and Mathematical Mechanics), BSE (ESMAECBSE).....	688
Mechanical Engineering (Energy & Environment), BSE (ESMAEEBSE) .....	689
Honors – Barrett, Honors College.....	690
Honors College (9HOHONALL) .....	690
Journalism, Walter Cronkite School of .....	691
Journalism & Mass Communication, BA (CSJMCBA) .....	691
Letters and Sciences, School of .....	692
Applied Science (Technical Communication), BAS (LSTECBAS) .....	692
Communication, BA (LSCOMBA) .....	693
English, BA (LSENGBA).....	693
General Studies, BGS (LSGNNSBGS).....	694
History, BA (LSHISBA) .....	695
Interdisciplinary Studies, BIS (LSBISBIS) .....	695
Interdisciplinary Studies (Organizational Studies), BIS (LSORGBIS).....	696
Liberal Studies, BLS (LABLSBLS) .....	697
Science, Technology and Society, BS (ECSTSBS).....	697
Technical Communication, BS (LSTECBBS) .....	698

Liberal Arts and Sciences, College of .....	699
African & African American Studies, BA (LAAFRBA).....	699
American Indian Studies, BS (LAAISBS) .....	700
Anthropology, BA (LAASBBA) .....	701
Anthropology, BS (LAASBBS) .....	701
Applied Mathematics for Life and Social Sciences, BS (LAAMLBS).....	702
Asia Studies (East Asia), BA (LAHSTEABA) .....	703
Asia Studies (South Asia), BA (LAHSTSABA).....	704
Asia Studies (Southeast Asia), BA (LAHSTSEABA).....	704
Asian Languages - Chinese, BA (LACHIBA).....	705
Asian Languages - Japanese, BA (LAJPNBA) .....	706
Asian Pacific American Studies, BA (AAPABA).....	707
Biochemistry, BA (LABCHBA).....	707
Biochemistry, BS (LABCHBS).....	708
Biochemistry (Medicinal Chemistry), BS (LABCHMBS).....	708
Biological Sciences, BS (LABSCBS) .....	709
Biological Sciences (Animal Physiology & Behavior), BS (LABSCABS).....	710
Biological Sciences (Biology & Society), BS (LABSCSBS) .....	711
Biological Sciences (Conservation Biology and Ecology), BS (LABSCCBS).....	711
Biological Sciences (Genetics, Cell & Developmental Biology), BS (LABSCGBS).....	712
Chemistry, BA (LACHMBA) .....	713
Chemistry, BS (LACHMBS) .....	713
Chemistry (Environmental Chemistry), BS (LACHMEBS) .....	714
Communication, BA (LACOMBA).....	715
Communication, BS (LACOMBS).....	715
Computational Mathematical Sciences, BS (LACMSBS) .....	716
Earth and Environmental Studies, BA (LAEESBA).....	717
Earth & Space Exploration, BS (LASESBS) .....	717
Earth and Space Exploration (Astrobiology and Biogeosciences), BS (LASESABBS).....	718
Earth and Space Exploration (Astrophysics), BS (LASESABS).....	719
Earth and Space Exploration (Exploration Systems Design), BS (LASESESDBS).....	720
Earth and Space Exploration (Geological Sciences), BS (LASESGSBS) .....	720
Economics, BS (LAECNBS).....	721
English (Creative Writing), BA (LAENGcba) .....	722
English (Linguistics), BA (LAENGNBA).....	723
English (Literature), BA (LAENGTBA) .....	723
Family & Human Development, BS (LAFASBS) .....	724
Film (Film & Media Studies), BA (LAFMSBA) .....	725

French, BA (LAFREBA).....	725
Geography, BA (LAGCUBA).....	726
Geography, BS (LAGCUBS).....	727
Geography (Meteorology-Climatology), BS (LAGCUMBS).....	728
Geography (Urban Studies), BS (LAGCUUBS) .....	728
German, BA (LAGERBA) .....	729
Global Health, BA (LASSHBA) .....	730
Global Studies, BA (LASGSBA) .....	730
History, BA (LAHISBA).....	731
Integrated Studies, BA (LAISTBA) .....	732
Integrated Studies, BS (LAISTBS) .....	733
International Letters and Cultures, BA (ASLCB) .....	733
International Letters & Cultures (Classics), BA (ASLCCB) .....	734
Italian, BA (LAITABA) .....	734
Jewish Studies, BA (LAJSTBA) .....	735
Justice Studies, BA (LAJUSBA) .....	736
Justice Studies, BS (LAJUSB) .....	736
Mathematics, BA (LAMATBA).....	737
Mathematics, BS (LAMATBS).....	738
Mathematics (Statistics), BS (LAMATTBS) .....	739
Microbiology, BS (LAMICBS).....	739
Molecular Biosciences/Biotechnology, BS (LAMBBBS) .....	740
Philosophy, BA (LAPHIBA) .....	741
Physics, BA (LAPHYBA) .....	742
Physics, BS (LAPHYBS) .....	742
Political Science, BA (LAPOSBA) .....	743
Political Science, BS (LAPOSBS) .....	744
Psychology, BA (LAPGSBA) .....	744
Psychology, BS (LAPGSBS) .....	745
Religious Studies, BA (LARELBA).....	746
Russian, BA (LARUSBA).....	746
Sociology, BS (LASOCBS).....	747
Spanish, BA (LASPABA).....	747
Speech & Hearing Science, BS (LASHSBS).....	748
Transborder Chicana/o & Latina/o Studies (Media and Expressive Culture), BA (LATCLMBA).....	749
Transborder Chicana/o & Latina/o Studies (Transborder Community Development and Health), BA (LATCLTB) .....	750
Transborder Chicana/o & Latina/o Studies (US and Mexican Regional Immigration Policy & Economy), BA (LATCLUBA) .....	751
Urban Planning, BSP (ARPUPBSP) .....	752

Women and Gender Studies, BA (LAWSTBA).....	753
<b>New College of Interdisciplinary Arts and Sciences.....</b>	<b>753</b>
American Studies, BA (ASAMSBA).....	753
Applied Computing, BS (ASACOBS) .....	754
Applied Mathematics, BS (ASMATBS) .....	755
Applied Science, BAS (ASBASBAS) .....	756
Communication, BA (ASCOMMBA) .....	756
Communication, BS (ASCOMMBS) .....	757
English, BA (ASENGBA) .....	758
Ethnicity, Race, First Nations Studies, BA (ASETHBA) .....	759
History, BA (ASHISBA) .....	760
Integrative Studies, BA (ASIASBA) .....	760
Interdisciplinary Arts & Performance, BA (ASIAPBA) .....	761
Life Sciences, BA (ASLSCBA) .....	762
Life Sciences, BS (ASLSCBS) .....	762
Life Sciences (Environmental Science), BS (ASLSCEBS) .....	763
Life Sciences (Forensics), BS (ASLSCFBS) .....	763
Political Science, BA (ASPOLBA) .....	764
Political Science, BS (ASPOLBS) .....	764
Psychology, BA (ASPGSBA) .....	765
Psychology, BS (ASPGSBS) .....	766
Religion & Applied Ethics Studies, BA (ASRELBA).....	767
Social and Behavioral Sciences, BA (ASSBSBA).....	768
Social & Behavioral Sciences, BS (ASSBSBS) .....	768
Sociology, BA (ASSOCBA) .....	769
Sociology, BS (ASSOCBS) .....	769
Spanish, BA (ASSPABA).....	770
Statistics, BS (ASSTABS) .....	771
Women and Gender Studies, BA (ASWSTBA).....	771
Women and Gender Studies, BS (ASWSTBS).....	772
<b>Nursing and Health Innovation, College of.....</b>	<b>773</b>
Nursing, BSN (NUNURDBSN) .....	773
<b>Nutrition and Health Promotion, School of.....</b>	<b>774</b>
Applied Science (Food Service Management), BAS (ECNTRBAS) .....	774
Applied Science (Health Sciences), BAS (NUHSCBAS) .....	774
Exercise & Wellness (Exercise & Wellness), BS (ECEXWBS) .....	775
Exercise & Wellness (Health Promotion), BS (ECEXWHBS) .....	776
Health Sciences (Health Policy), BS (NUHSCHPBS) .....	777

Health Sciences (Healthy Lifestyles Coaching), BS (NUHSCHLCBS) .....	778
Health Sciences (Pre-professional), BS (NUHSCPREGS).....	778
Kinesiology, BS (NUKINBS) .....	779
Nutrition (Dietetics), BS (ECNTRDBS) .....	780
Nutrition (Food & Nutrition Management), BS (ECNTRMBS) .....	781
Nutrition (Human Nutrition), BS (ECNTRHBS) .....	781
Nutrition (Nutrition Communication), BS (ECNTRCBS) .....	782
<b>Public Programs, College of.....</b>	<b>783</b>
Criminal Justice & Criminology, BS (PPCRIMJBS) .....	783
Nonprofit Leadership & Management, BS (PPNLMBG) .....	784
Parks & Recreation Management, BS (PPPRMBS) .....	785
Parks & Recreation Management (Therapeutic Recreation), BS (PPPRMTRBS) .....	786
Public Service & Public Policy, BS (PPPAFBG) .....	786
Social Work, BSW (PPSWUSWU) .....	787
Tourism Development & Management, BS (PPTDMBS) .....	788
Tourism Development & Management (Resort and Accommodations Leadership), BS (PPTDMRBS) .....	789
Tourism Development and Management (Sustainable Tourism), BS (PPTDMSBS) .....	789
Urban & Metropolitan Studies, BA (PPURBBA).....	790
Urban & Metropolitan Studies, BS (PPURBBS).....	791
<b>Sustainability, School of.....</b>	<b>792</b>
Sustainability, BA (SUSUSTBA) .....	792
Sustainability, BS (SUSUSTBS) .....	793
<b>Teachers College, Mary Lou Fulton .....</b>	<b>794</b>
Early Childhood Education, BAE (EDECDBAE) .....	794
Elementary Education, BAE (TEEDBAE).....	794
Elementary Education (Diversity in Language and Learning), BAE (TEDLLBAE) .....	795
Secondary Education (Biological Sciences), BAE (TEBIOBAE).....	795
Secondary Education (Business), BAE (EDBUSBAE).....	796
Secondary Education (Chemistry), BAE (TECHMBAE) .....	797
Secondary Education (Earth & Space Sciences), BAE (EDESSBAE) .....	798
Secondary Education (Economics), BAE (EDECNBBAE) .....	799
Secondary Education (English), BAE (TEENGBAE) .....	800
Secondary Education (French), BAE (EDFREBAE) .....	801
Secondary Education (Geography), BAE (EDGCUBAE) .....	802
Secondary Education (German), BAE (EDGERBAE) .....	803
Secondary Education (History), BAE (TEHISBAE).....	804
Secondary Education (Japanese), BAE (EDJPNBAE) .....	805
Secondary Education (Mathematics), BAE (TEMATBAE).....	805

Secondary Education (Physical Education), BAE (ECPPEBAE) .....	806
Secondary Education (Physics), BAE (EDPHYBAE) .....	807
Secondary Education (Political Science), BAE (TEPOLBAE) .....	808
Secondary Education (Spanish), BAE (TESPABAE) .....	809
Special Education, BAE (TESPEBAE).....	810
<b>Technology and Innovation, College of .....</b>	<b>811</b>
Aeronautical Management Technology (Air Transportation Management), BS (TSAMTMBS).....	811
Aeronautical Management Technology (Professional Flight), BS (TSAMTFBS).....	812
Agribusiness (Agribusiness Science), BS (AGAGBPBS).....	812
Agribusiness (Global Agribusiness), BS (AGAGBGABS).....	812
Air Traffic Management, BS (TSATMBS).....	813
Applied Biological Sciences (Applied Biological Sciences), BS (TSABSABS) .....	813
Applied Biological Sciences (Secondary Education in Biology), BS (TSABSSBS) .....	814
Applied Biological Sciences (Urban Horticulture), BS (TSABSUBS).....	815
Applied Biological Sciences (Wildlife & Restoration Ecology), BS (TSABSRBS).....	815
Applied Computer Science, BS (TSACSBS).....	816
Applied Psychology, BS (ECPSYBS) .....	817
Applied Science, BAS (TSAPSBAS) .....	817
Applied Science (Aviation Management Technology), BAS (TSAMTABAS) .....	818
Applied Science (Electronic Energy Systems), BAS (TSEESBAS).....	818
Applied Science (Emergency Management), BAS (TSIMCEBAS) .....	819
Applied Science (Graphic Information Technology), BAS (TSGITBAS).....	820
Applied Science (Internet & Web Development), BAS (TSIWDBAS) .....	821
Applied Science (Manufacturing Technology & Management), BAS (TSMETFBAS).....	821
Applied Science (Operations Management), BAS (TSIMCOBAS).....	822
Applied Science (Software & Computing Systems), BAS (TSCSTBAS).....	822
Computer Systems (Computer Hardware Technology), BS (TSCSTHBS) .....	823
Computer Systems (Embedded Systems Technology), BS (TSCSTMBS) .....	823
Electronics Engineering Technology (Alternative Energy Technologies), BS (TSEETABS) .....	824
Electronics Engineering Technology (Electronic Systems), BS (TSEETEBS).....	825
Electronics Engineering Technology (Integrated Electronic Systems), BS (TSEETINBS) .....	826
Engineering, BSE (TSEGRCBSE) .....	827
Environmental Technology Management, BS (TSETMBS).....	827
Food Industry Management, BS (BAFIMBS).....	828
Graphic Information Technology, BS (TSGITBS) .....	829
Manufacturing Engineering Technology, BS (TSMETBBS) .....	830
Manufacturing Engineering Technology (Mechanical), BS (TSMETMBS) .....	831
Mechanical Engineering Technology, BS (TSMECBB) .....	832

Mechanical Engineering Technology (Aeronautical Engineering Technology), BS (TSMECEBS) .....	833
Mechanical Engineering Technology (Automation Engineering Technology), BS (TSMECUBS).....	834
Mechanical Engineering Technology (Automotive), BS (TSMECTBS) .....	835
Software Engineering, BS (TSSERBS) .....	836
Technological Entrepreneurship and Management, BS (TSTEMBS) .....	837
Undergraduate Exploratory Programs (Program Descriptions) .....	838
University College .....	838
Exploratory Health & Life Sciences, Pre-Prof/E (UCHSCIEXPL).....	838
Exploratory Humanities, Fine Arts & Design, Pre-Prof/E (UCHUFAEXPL).....	838
Exploratory Math, Physical Sciences, Engineering & Technology, Pre-Prof/E (UCEMTPEXPL) .....	839
Exploratory Social & Behavioral Sciences, Pre-Prof/E (UCSBSEXPL) .....	839
Undergraduate Programs – Other (Program Descriptions).....	839
Pre-Health/Pre-Med Professions, Pre-Prof/E (LAMEDPRE) .....	839
Pre-Law, Pre-Prof/E (LALAWPRE).....	840
Major Maps (Undergraduate Programs Requirements) .....	842