

## B.S. IN MATHEMATICAL SCIENCES

2006-07

### General Education Requirements

Writing	Credits	Grade
ENGL 101 Writing & Rhetoric I (C grade or better required)		
ENGL 200 Writing & Rhetoric II (C grade or better required; must complete 24 credits before enrolling)		

<b>Writing Intensive:</b> 2 WI courses required, at least one must be in the major. See Approved List A.		
MATH 490 Mathematical Expositions (also fulfills a major requirement)		

Math & Statistics:		
MATH 151 Pre-calculus (MATH 141 or Placement)		

Ethical Principles: Select a course from Approved List C.		

Natural Sciences: Complete one of the following sequences of courses with lab: BIOL 151-152 OR PHYS 207-208 OR PHYS 201-202 OR CHEM 101-102.		

Complete another course with lab in the natural sciences from Approved List D. This course must be in the biological sciences if the above sequence was in PHYS or CHEM OR must be in the physical sciences if the BIOL sequence was selected.		

Complete one other course in the natural sciences OR complete a minor or second major offered outside the Department of Mathematical Sciences. Students in the Extended Teacher Preparation program are considered to have a second major outside the Department of Mathematical Sciences.		

Visual & Performing Arts: Take 2-3 credits from Approved List E.		
	Credits	Grade

Literature: Take a literature course from Approved List F.		

Civilization: Take 1 course from each area listed (9 credits total) but no more than 6 credits in any one discipline. OR take two 4-credit interdisciplinary courses (8 credits total) that combine elements of each area.		
Historical and Cultural Origins: 1 course from Approved List G.		
American (U.S.) Studies: 1 course from Approved List H.		
Global Studies: 1 course from Approved List I.		

Foreign Language: Must demonstrate competency through 102 level by course or placement test.		
101 level		
102 level		

Human Behavior: Take 2 courses in different disciplines from Approved List J.		

Urban Environment: Take 1 course from Approved List K.		

NAME \_\_\_\_\_

 Has VCCS Associate Degree \_\_\_\_\_



# College of Humanities & Sciences – Approved Lists

## Approved List A – Written Communications

(See course descriptions in the bulletin for any prerequisites.)

- English
  - ENGL 101 Writing and Rhetoric Workshop I
  - ENGL 200 Writing and Rhetoric Workshop II (taken in second semester of sophomore year.)
- Writing intensive courses
  - African American Studies
    - AFAM 408 Seminar in African-American Studies
  - Anthropology
    - ANTH 301/BIOL 341 Human Evolution
    - ANTH 302 Archeological Theory
    - ANTH 303 Archeological Methods and Research Design
    - ANTH/INTL 348 South American Ethnography
    - ANTH/INTL 349 Rethinking a Continent: Latin America
    - ANTH/INTL 350 Rethinking a Continent: Europe
    - ANTH/RELS/INTL 425 Religion, Magic and Witchcraft
  - Biology
    - BIOL 300 Biotechniques Laboratory (.5 WI credit)
    - BIOL 309 Entomology (.5 WI credit)
    - BIOL 310L Laboratory in Genetics (.5 WI credit)
    - BIOL 312L Invertebrate Zoology Laboratory (.5 WI credit)
    - BIOL 317L Ecology Laboratory
    - BIOL 320 Biology of the Seed Plant (.5 WI credit)
    - BIOL 321L Plant Development Laboratory
    - BIOL 341/ANTH 301 Human Evolution
    - BIOL 392 Introduction to Research
    - BIOL 445 Neurobiology and Behavior (.5 WI credit)
    - BIOL 514 Stream Ecology (.5 WI credit)
    - BIOL 518 Plant Ecology (.5 WI credit)
    - BIOL 522 Evolution and Speciation
    - BIOL 541/BNFO 541 Laboratory in Molecular Genetics (.5 WI credit)
  - Chemistry
    - CHEZ 303L Physical Chemistry Laboratory I
    - CHEZ 409L Instrumental Analysis Laboratory
  - Criminal Justice
    - CRJS/ENGL 302 Legal Writing
    - CRJS/HSEP 330 Legal and Constitutional Issues in Homeland Security and Emergency Preparedness
    - CRJS 358 Lawyer's Role in the Justice System
    - CRJS 480 Senior Seminar
  - Economics
    - ECON 302 Macroeconomic Theory
  - English
    - ENGL 301 English Studies: Reading Literature
    - ENGL/CRJS 302 Legal Writing
    - ENGL 303 Writing in the Workplace
    - ENGL 304 Advanced Writing
    - ENGL/MGMT 327 Business and Technical Report Writing
    - ENGL/RELS 361 The Bible as Literature
    - ENGL/ENVS 385 Nature Writing
    - ENGL 490 Senior Seminar in English (any topic)
  - Environmental studies
    - ENVS/ENGL 385 Nature Writing
    - ENVS 490 Research Seminar in Environmental Studies
  - French
    - FREN 300, 301 Advanced Grammar and Writing
  - Forensic science
    - FRSC 365 Forensic Microscopy
    - FRSC 375 Forensic Evidence, Law and Criminal Procedures .5WI
  - German
    - GRMN 301 Advanced Grammar and Writing
  - Geography
    - GEOG/INTL 303 World Regions
    - GEOG/INTL 308 Urban Economic Geography
  - History
    - HIST 300 Introduction to Historical Study
    - HIST 369 American Constitutional and Legal Development
    - HIST 490 Seminar in History (any topic)
  - Homeland Security and Emergency Preparedness
    - HSEP/CRJS 330 Legal and Constitutional Issues in Homeland Security and Emergency Preparedness
    - HSEP 490 Senior Seminar
  - Humanities and sciences
    - HUMS 591 Special Topics: Arts in Contemporary Britain (summer course only)
  - Interdisciplinary science
    - INSC 301 Investigatory Mathematics and Science
  - International studies
    - INTL/GEOG 303 World Regions
    - INTL/ANTH 348 South American Ethnography
    - INTL/ANTH 349 Rethinking a Continent: Latin America
    - INTL/ANTH 350 Rethinking a Continent: Europe
    - INTL/POLI 365 International Political Economy
    - INTL/RELS/WMNS 372 Global Women's Spirituality
    - INTL/RELS 409 Modern Islamic Thought and Global Trends
    - INTL/RELS/PHIL 412 Zen Buddhism

- INTL/ANTH/RELS 425 Religion, Magic and Witchcraft
- INTL/RELS 441 Islamic Mysticism: the Sufis
- INTL/POLI 468 Seminar in Comparative Foreign Policy
- INTL 490 Seminar in International Issues
- Life sciences
  - LFSC/PSYC 307 Community Solutions: Multiple Perspectives
- Mass communications
  - MASC 203 Writing for Mass Media
  - MASC 333 Public Relations Writing
  - MASC 363 Introduction to Broadcast Writing
  - MASC 392 Advertising Copywriting
  - MASC 403 Advanced Reporting
  - MASC 404 Specialized Project Reporting
  - MASC 475 Capital News Service
- Mathematics
  - MATH 490 Mathematical Expositions
  - MATH 530 The History of Mathematics
  - MATH 531 Expositions in Modern Mathematics
- Management/Business
  - MGMT/ENGL 327 Business and Technical Report Writing
- Operations Research
  - OPER/STAT 490 Communications in Statistics and Operations Research
- Philosophy
  - PHIL 301 Mind and Reality
  - PHIL 302 Reason and Knowledge
  - PHIL 303 Philosophy of Language
  - PHIL 320 Philosophy of Law
  - PHIL 335 Social and Political Philosophy
  - PHIL/INTL/RELS 412 Zen Buddhism
  - PHIL 490 Seminar in Philosophy
- Physics
  - PHYS 450 Senior Physics Laboratory
- Political science
  - POL/WMNS 316 Women and the Law
  - POL 341, 342 History of Political Thought
  - POL/INTL 365 International Political Economy
  - POL/INTL 468 Seminar in Comparative Foreign Policy
  - POL 490 Senior Seminar
- Psychology
  - PSYCLFSC 307 Community Solutions: Multiple Perspectives
  - PSYC 317 Experimental Methods
- Religious studies
  - RELS/ENGL 361 The Bible as Literature
  - RELS/WMNS 371 Islam and Women
  - RELS/WMNS/INTL 372 Global Women's Spirituality
  - RELS/INTL 409 Modern Islamic Thought and Global Trends
  - RELS/PHIL/INTL 412 Zen Buddhism
  - RELS/INTL/ANTH 425 Religion, Magic and Witchcraft
  - RELS/INTL 441 Islamic Mysticism: the Sufis
  - RELS 490 Seminar in Religious Studies
- Sociology
  - SOCY 402 Sociological Theory
  - SOCY 435 Work and Management in Modern Society
- Spanish
  - SPAN 300, 301 Advanced Grammar and Writing
- Statistics and Operations Research
  - STAT/OPER 490 Communications in Statistics and Operations Research
- Urban studies
  - URSP/GEOG 306 Urban Economic Geography
- Women's studies
  - WMNS/POL 316 Women and the Law
  - WMNS/RELS 371 Islam and Women
  - WMNS/INTL/RELS 372 Global Women's Spirituality
  - WMNS 401 Topical Senior Seminar

## Approved List B – Math & Statistics

(See course descriptions in the bulletin for any prerequisites.)

- MATH 131 Introduction to Contemporary Mathematics
- MATH 151 Precalculus Mathematics
- MATH 200 Calculus with Analytic Geometry
- STAT 208 Statistical Thinking
- STAT 210 Basic Practice of Statistics
- STAT 212 Concepts of Statistics (for science majors only)

## Approved List C – Ethical Principles

(See course descriptions in the bulletin for any prerequisites.)

- International studies
  - INTL 341/RELS 340 Global Ethics and the World's Religions
- Mass communications
  - MASC 290 Ethical Problems in Mass Media
- Philosophy
  - PHIL 211 History of Ethics
  - PHIL 212 Ethics and Applications
  - PHIL 213 Ethics and Health Care
  - PHIL 214 Ethics and Business
- Political science
  -

- POLI 107 Political Theory
- Religious studies
  - RELS 340/INTL 341 Global Ethics and the World's Religions
- Sociology
  - SOCY 445 Medical Sociology

## Approved List D – Natural Sciences

(See course descriptions in the bulletin for any prerequisites.)

- Biological sciences
  - BIOL 101 Biological Concepts
  - BIOL 101L Biological Concepts Laboratory
  - BIOL/ENVS 103 Environmental Science
  - BIOL/ENVS 103L Environmental Science Laboratory
  - BIOL 151 Introduction to Biological Science I (for biology and other science majors)
  - BIOL 151L Introduction to Biological Science Laboratory I (for biology and other science majors)
  - BIOL 152 Introduction to Biological Science II (for biology and other science majors)
  - BIOL 152L Introduction to Biological Science Laboratory II (for biology and other science majors)
- Physical sciences
  - Chemistry
    - CHEM 101 General Chemistry (for science majors)
    - CHEZ/FRSZ 101L General Chemistry Laboratory (for science majors)
    - CHEM 110 Chemistry and Society
    - CHEZ 110L Chemistry and Society, Laboratory
    - CHEM 112 Chemistry in the News
  - Forensic Science
    - FRSZ/CHEZ 101L General Chemistry Laboratory (for science majors)
  - Physics
    - PHYS 101 Foundations of Physics
    - PHYZ 101L Foundations of Physics Laboratory
    - PHYS 103 Elementary Astronomy
    - PHYZ 103L Elementary Astronomy Laboratory
    - PHYS 107 Wonders of Technology
    - PHYS 202 General Physics (for science majors)
    - PHYS 208 University Physics II (for science majors)

## Approved List E – Visual & Performing Arts

A. Basic-level courses designed specifically for non-arts majors.

- Art education
  - ARTE 301-302 Art for Elementary Teachers
  - ARTE 408 Two-dimensional Art Experiences
  - ARTE 409 Three-dimensional Art Experiences

Art foundation

- ARTF 121-122 Introduction to Drawing
- Dance and choreography
  - DANC 171, 172 Tai Chi
  - DANC 183, 184 Introduction to Modern Dance Technique
  - DANC 313 Dance in World Cultures

Interior design

- IDES 103-104 Introductory Studio Course

Music

- MHIS 105 Introduction to Writing Music
- MHIS 243 Music Appreciation

Sculpture

- SCPT 209 Introduction to Sculpture

Theatre

- THEA 107, 108 Introduction to Stage Performance

B. Basic-level courses open to both art and non-art majors.

African American studies

- AFAM/DANC 121, 122 Tap Technique I
- AFAM/DANC 125, 127 African-Caribbean Dance
- AFAM/MHIS 250 Introduction to African-American Music
- AFAM/THIA 303 Black Theatre
- AFAM 350/MHIS 350/INTL 370 Studies in the Music of the African Continent and Diaspora

Art history

- ARTH 103, 104 Survey of Western Art
- ARTH 207 Introduction to Non-Western Art
- ARTH 270, 271 History of the Motion Picture

Crafts

- CRAF 201-202 Metalsmithing
- CRAF 211-212 Jewelry
- CRAF 221 Woodworking Techniques
- CRAF 241 Ceramics: Handbuilding
- CRAF 242 Ceramics: Wheelthrowing
- CRAF 251, 252 Introduction to Glassworking
- CRAF 261, 262 Beginning Textiles

Dance and choreography

- DANC 103-104 Survey of Dance History

# College of Humanities & Sciences – Approved Lists

- DANC 105-106 Improvisation  
 DANC 111-112 Ballet Technique I  
 DANC 114, 214, 314, 414 Summer Dance Workshop  
 DANC/AFAM 121, 122 Tap Technique I  
 DANC/AFAM 126, 127 African-Caribbean Dance I  
 DANC 141, 142 Ballroom Dancing  
 DANC 243 Dynamic Alignment  
 DANC 291 Topics in Dance  
 DANC 313 Dance in World Cultures  
 Fashion design and merchandising  
 FASH 240 Survey of the Fashion Industry I  
 Interior design  
 IDES 103-104 Introductory Studio Course  
 International studies  
 INTL 370/AFAM 350/MHIS 350 Studies in the Music of the African Continent and Diaspora  
 Music  
 APPM 300-level Private Instruction: Principal and Secondary Performing Mediums  
 APPM 370 Large Ensembles (auditions required for all sections)  
 APPM 390 Small Ensembles (auditions required for all sections)  
 MHIS 120 Introduction to World Musical Styles  
 MHIS/AFAM 250 Introduction to African-American Music  
 MHIS 350/INTL 370/AFAM 350 Studies in the Music of the African Continent and Diaspora  
 Theatre  
 THEA 103 Stagecraft  
 THEA 211-212 Introduction to Drama  
 THEA 229 Introduction to Lighting Design  
 THEA/AFAM 303 Black Theatre

C Advanced-level courses open to both arts and non-arts majors. Some require special permission/audition.

- Dance and choreography  
 DANC 221, 222 Tap Technique II  
 DANC 319, 320 Video/Choreography Workshop

## Approved List F – Literature

- English  
 ENGL 201 Western World Literature I  
 ENGL 202 Western World Literature II  
 ENGL 203 British Literature I  
 ENGL 204 British Literature II  
 ENGL 205 American Literature I  
 ENGL 206 American Literature II  
 ENGL 211 Contemporary World Literature  
 ENGL 215 Readings in Literature  
 ENGL 216 Readings in Narrative  
 ENGL/WMNS 236 Women in Literature  
 ENGL 241 Shakespeare's Plays  
 ENGL 291 Topics in Literature  
 Women's studies  
 WMNS/ENGL 236 Women in Literature

## Approved List G – Historical & Cultural Origins

- African American studies  
 AFAM/HIST 105 Survey of African History I  
 AFAM/HIST 106 Survey of African History II  
 Anthropology  
 ANTH 105/INTL 104 Introduction to Archaeology  
 ANTH/GEOG 312 History of Human Settlement  
 Foreign language  
 FRLG/INTL 203 Language and Identity  
 Geography  
 GEOG/ANTH 312 History of Human Settlement  
 History  
 HIST 101 Survey of European History I  
 HIST 102 Survey of European History II  
 HIST/AFAM 105 Survey of African History I  
 HIST/AFAM 106 Survey of African History II  
 HIST 107 Survey of East Asian Civilizations I  
 HIST 108 Survey of East Asian Civilizations II  
 HIST 109 Survey of Latin American History I  
 HIST 110 Survey of Latin American History II  
 International studies  
 INTL 104/ANTH 105 Introduction to Archaeology  
 INTL/FRLG 203 Language and Identity  
 INTL/RELS 311 Religions of the World I  
 INTL/RELS 312 Religions of the World II

- Italian  
 ITAL 391/HUMS 491 Perugia Study Abroad  
 Philosophy  
 PHIL 103 Ancient Greek and Medieval Western Philosophy  
 PHIL 104 Modern Western Philosophy  
 Religious studies  
 RELS/INTL 311 Religions of the World I  
 RELS/INTL 312 Religions of the World II

## Approved List H – American Studies

- American studies  
 AMST 394 Perspectives in American Studies  
 Foreign language  
 FRLG/INTL 204 Language and Groups in the United States  
 History  
 HIST 103 Survey of American History I  
 HIST 104 Survey of American History II  
 International studies  
 INTL/FRLG 204 Language and Groups in the United States  
 Political science  
 POLI 103 U.S. Government  
 Religious studies  
 RELS 334 Religion in Contemporary America

## Approved List I – Global Studies

- Anthropology  
 ANTH/INTL 455 Anthropology of Development and Globalization (INTL 101 prerequisite)  
 Geography  
 GEOG/INTL 303, 304 World Regions  
 International studies  
 INTL 101 Human Societies and Globalization  
 INTL/POLI 105 International Relations  
 INTL/MASC 151 Communications Technology and Global Society  
 INTL/GEOG 303, 304 World Regions  
 INTL/SOCY 330 Global Societies: Trends and Issues  
 INTL/POLI 365 International Political Economy  
 INTL/ANTH 455 Anthropology of Development and Globalization (INTL 101 prerequisite)  
 Mass communications  
 MASC/INTL 151 Communications Technology and Global Society  
 Political science  
 POLI/INTL 105 International Relations  
 POLI 109 Comparative Politics  
 POLI/INTL 365 International Political Economy  
 Sociology  
 SOCY/INTL 330 Global Societies: Trends and Issues  
 SOCY 430 Politics, Power and Ideology

## Approved List J – Human Behavior

- Anthropology  
 ANTH/INTL 103 Introduction to Anthropology  
 ANTH/INTL 348 South American Ethnography (ANTH 103 prerequisite)  
 ANTH/INTL 349 Rethinking a Continent: Latin America (ANTH 103 prerequisite)  
 Economics  
 ECON 101/INTL 102 Introduction to Political Economy  
 ECON 203 Introduction to Economics  
 Geography  
 GEOG 102 Introduction to Human Geography  
 Homeland Security and Emergency Preparedness  
 HSEP 101 Homeland Security and Emergency Preparedness  
 International studies  
 INTL 102/ECON 101 Introduction to Political Economy  
 INTL/ANTH 103 Introduction to Anthropology  
 INTL/ANTH 348 South American Ethnography (ANTH 103 prerequisite)  
 INTL/ANTH 349 Rethinking a Continent: Latin America (ANTH 103 prerequisite)  
 Mass communications  
 MASC 101 Mass Communications  
 Psychology  
 PSYC 101 Introduction to Psychology  
 Social Science  
 SOCS 340 Human Sexuality  
 Sociology  
 SOCY 101 General Sociology  
 SOCY 340 Self and Society  
 Women's studies  
 WMNS 201 Introduction to Women's Studies

## Approved List K – Urban Environment

All courses designated as "service learning" fulfill this requirement. (See course descriptions in the bulletin for any prerequisites.)

- Anthropology  
 ANTH/GEOG 312 History of Human Settlement  
 ANTH 450/ENGL 454/INTL 454 Cross-cultural Communication  
 Criminal justice  
 CRJS 181 Justice System Survey  
 CRJS 305 Policing Theories and Practice  
 CRJS 352 Crime and Delinquency Prevention  
 CRJS 468 Economic and Organized Crime  
 CRJS 491 Topics in Criminal Justice: Youth in Corrections/Service Learning (only this topic)  
 Economics  
 ECON/URSP 321 Urban Economics  
 English  
 ENGL 454/INTL 454/ANTH 450 Cross-cultural Communication  
 Environmental science  
 ENVS 491 Topics in Environmental Studies: Ecology of Urban Environments (only this topic)  
 French  
 FREN 301 Advanced Grammar and Writing  
 Foreign language  
 FRLG 345/URSP 350/INTL 345 Great Cities of the World  
 FRLG 490 Foreign Languages Urban Internship  
 Geography  
 GEOG/URSP 302 Land Use Capability  
 GEOG/URSP 306 Urban Economics: Geography  
 GEOG/ANTH 312 History of Human Settlement  
 GEOG/INTL/URSP 340 World Cities Outside of North America  
 Humanities and sciences  
 HUMS 391 Special Topics in the Humanities and Sciences: Science Education in the Urban Environment (only this topic)  
 International studies  
 INTL/URSP/GEOG 340 World Cities Outside of North America  
 INTL 345/FRLG 345/URSP 350 Great Cities of the World  
 INTL 454/ANTH 450/ENGL 454 Cross-cultural Communication  
 Mass communications  
 MASC 303 General Assignment Reporting  
 MASC 403 Advanced Reporting  
 MASC 404 Specialized Project Reporting  
 MASC 439 Public Relations Campaigns  
 MASC 464 Advance Television Newsgathering  
 Philosophy  
 PHIL 340 Philosophy for Children  
 Physics  
 PHYS 291 Topics in Physical Science: Physics Outreach - Richmond Elementary Schools (only this topic)  
 Political science  
 POLI 321 City Politics  
 Psychology  
 PSYC 491 Topics in Psychology: Youth in Corrections/Service Learning (only this topic)  
 PSYC 493 Fieldwork: Urban Environment (only this topic)  
 PSYC 493 Fieldwork: Mentoring Children at Risk (only this topic)  
 Social work  
 SLWK 422 Social Welfare Legislation and Services  
 Sociology  
 SOCY 302 Contemporary Social Problems  
 SOCY 327 Urban Sociology  
 SOCY 391 Topics in Sociology: Youth in Corrections/Service Learning (only this topic)  
 Spanish  
 SPAN 402 Language Issues in the Spanish-speaking World  
 Teacher Education  
 TEDU 101 Introduction to Teaching  
 Urban studies  
 URSP 116 Introduction to the City  
 URSP 245 Housing and Community Revitalization  
 URSP 261 Design of the City  
 URSP/GEOG 302 Land Use Capability  
 URSP 304 Urban Social Systems  
 URSP/GEOG 306 Urban Economic Geography  
 URSP 315 The Evolution of American Cities  
 URSP 316 Urban Life in Modern America  
 URSP/ECON 321 Urban Economics  
 URSP/GEOG/INTL 340 World Cities Outside of North America  
 URSP 350/INTL 345/FRLG 345 Great Cities of the World