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Registrar (Regular Classes)	683-7371
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Financial Aid	683-7511
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Courses Removed from Catalog

The following courses are not available effective 2004-05 Academic Year.
Notations are made regarding replacement courses. Contact the appropriate department for further information.

Course	Page	Status
ART 192 Computer Layout & Design I (3)	115	Deleted
ART 300 Expressive Arts (3)	116	Deleted
ART 331 Book Arts (3)	116	Deleted
BUS 425 Teamwork & Organizational Change (3)	122	Replaced by BUS 466 International Management (3)
BUS 465 Labor-Management Relations (3)	122	Replaced by BUS 426 Strategic Management (3)
ED 448 Reading & Writing Lab (3)	134	Deleted
ENG 230 Magical Realism (3)	137	Deleted
ENG 235 Literature of the Borderlands (3)	137	Deleted
ENG 262 Women's Literary Traditions[1] (3)	137	On Moratorium
ENG 304 Playwriting/Scriptwriting Workshop[1] (3)	138	On Moratorium
ENG 335 Literature of the Americas[1] (3)	138	On Moratorium
ENG 337 Writers of the American West[1] (3)	138	On Moratorium
ENG 338 Montana Writers[1] (3)	138	On Moratorium
ENG 350 Professional Speaking[1] (3)	138	On Moratorium
ENG 404 Advanced Playwriting/Scriptwriting Workshop[1] (3)	139	On Moratorium
ENG 430 The Legend of King Arthur[1] (4)	139	On Moratorium
ENVS 250 Map, Compass, & Global Positioning (1)	140}	ENVS 250 & 251 Replaced by ENVS 269
ENVS 251 Map, Compass, & GPS (1)	140}	Wildlands Skills: Map, Compass, & GPS (2)
HHP 331 American Red Cross First Aid- Responding to Emergencies	149	Deleted
MATH 001 Fundamentals of Mathematics (3)	160	Deleted
MATH 003 Beginning Algebra (3)	160	Replaced by MATH 007 Algebra (4)
MATH 100 Intermediate Algebra (3)	160	Replaced by MATH 007 Algebra (4)
MATH 104 Mathematics for the Liberal Arts (3)	161	Replaced by variety of 100 level courses
MATH 110 Probability & Linear Mathematics (3)	161	Replaced by MATH 102 Linear Mathematics (4) and MATH 131 Probability (4)
MATH 115 Mathematics for Elementary Teachers (5)	161	Replaced by MATH 105 Number Theory (4) and MATH 100 Descriptive Statistics (1)
MATH 116 Mathematics for Elementary Teachers (4)	161	Replaced by MATH 106 Geometry (4)
MATH 151 Precalculus (5)	161	Replaced by MATH 111 College Algebra (4) and MATH 112 Trigonometry & Complex Numbers (4)
MATH 152 Calculus I (5)	161	Replaced by MATH 201 Calculus I (4)
MATH 153 Calculus II (4)	161	Replaced by MATH 202 Calculus II (4)
MATH 210 Computer Mathematics (3)	161	Deleted
MATH 251 Calculus III (4)	162	Replaced by MATH 203 Calculus III (4)
MATH 331 College Geometry (3)	162	Replaced by MATH 341 College Geometry (4)
MATH 361 Foundations of Higher Mathematics (3)	162	Replaced by MATH 343 Foundations of Mathematics (4)
MATH 363 Linear Algebra (4)	162	Replaced by MATH 260 Linear Algebra (4)
MATH 460 History of Mathematics (2)	163	Replaced by MATH 342 History of Mathematics (4)
SS 202 College Transitions-Orientation Leader (3)	173	Deleted
SS 204 Peer Tutoring (3)	173	Replaced by EOP 204 Peer Tutoring (3)

[1] "On Moratorium" effective 2004-05 Academic Year, Not Offered Until Further Notice

Degrees & Courses On Moratorium
Effective 2004-05 Academic Year

Check with the Vice Chancellor for Academic Affairs regarding continuing availability of these degrees and courses.

Bachelor of Arts
American West Related Area (pages 58/64 of 2003-04 Catalog)

Bachelor of Science: Secondary Education
English Broadfield (page 88 of 2003-04 Catalog)
Music K-12 Major (page 95 of 2003-04 Catalog)

Courses (pages 137-139 of 2003-04 Catalog)
ENG 262 Women's Literary Traditions (3)
ENG 304 Playwriting/Scriptwriting Workshop (3)
ENG 335 Literature of the Americas (3)
ENG 337 Writers of the American West (3)
ENG 338 Montana Writers (3)
ENG 350 Professional Speaking (3)
ENG 404 Advanced Playwriting/Scriptwriting Workshop (3)
ENG 430 Legends of King Arthur (3)

General Education Program……………………34-36 credits

from page 55 in 2003-04 Catalog (was 33-35 credits)

Revised Math requirement and total credits;
ENG Writing Series courses ENG 230, 235, and 262 deleted from Catalog

Foundational Courses .... 13 credits
ENG 101 Freshman Composition (3)
ENG 131 Oral Communication (3)
COMS 101 Introduction to Computers (3)
MATH 101 Logic or higher level math course[1] (4)
  [1 Elementary Education Majors must take MATH 106]

Arts & Humanities .... 6 credits
Two courses from the following choices:
  ENG Literature Series: ENG 161-168[2] (3)
  ENG Writing Series: ENG 204/259/263-267/273-276/279-280[3] (3)
  FA 101 Introduction to Creative & Performing Arts (3)
  PHIL 100 Introduction to Philosophy (3)
    [2 Elementary Education Majors must take one from ENG 161-168 series]
    [3 Secondary Education Majors must take one from ENG Writing series]

Behavioral & Social Sciences....... 9 credits
One 100- or 200-level ANTH/PSY/SOC course[4] (3)
One 100- or 200-level HIST course (3)
One of the following five:
  ECON 251 Principles of Macroeconomics (3)
  ECON 252 Principles of Microeconomics (3)
  GEOG 102 Human Geography (3)
  GEOG 202 Regional Geography of North America (3)
  POLS 121 American Government (3)
    [4 Secondary Education Majors must take either ANTH 105, PSY 100, or SOC 115]

Natural Sciences........................ 6-8 credits
Two 100- or 200-level courses from any **two** science rubrics—BIO/CHEM/GEOL/PHYS[5]
    [5 Elementary Education Majors must take BIO 101 and GEOL 101]

Bachelor of Arts

Degree On Moratorium

The following degree is "On Moratorium" effective 2004-05 Academic Year.
Check with the Vice Chancellor for Academic Affairs regarding continuing availability of this degree.

Bachelor of Arts
American West Related Area
(pages 58/64 of 2003-04 Catalog)

BACHELOR OF ARTS
New& Revised Related Areas

APPLIED MATHEMATICAL SCIENCE RELATED AREA
(Revised from pages 58/62 of 2003-04 Catalog)

Elective credits required for this area	10-14
Total Credits	**10-14**

MATH 202	4
MATH 203	4
MATH 260	4
MATH 401	4
MATH 433	4
PHYS 234	4
Take 2 from these 7:	8
BIO 471[1] (4)	
BIO 477[1] (4)	
GEOL 378 (4)	
MATH 343[2] (4)	
PHYS 235 (4)	
PHYS 340[3] (4)	
PHYS 401[3] (4)	
Total Credits	**32**

[1] Prereq: BIO 151 & 152
[2] Prereq: MATH 341
[3] Prereq: PHYS 235

EQUINE STUDIES RELATED AREA
(New Degree Program effective 2004-05 Academic Year)

Elective credits required for this area	Varies depending on Option Selected
Total Credits	**Varies**

EQST 101	4
EQST 102	2
EQST 104	2
EQST 201	4
EQST 202	4
EQST 203	4
EQST 204	4
Select 1 from these 2:	4
EQST 401	
EQST 404	
Total Credits	**28**

Bachelor of Science: Business

BS: BUSINESS
New & Revised Option Areas

EQUINE STUDIES OPTION
(New Degree Program effective 2004-05 Academic Year)

Elective credits required for this area	4
Total Credits	**4**

EQST 101	4
Take 1 from these 2:	2
EQST 102 (2)	
EQST 104 (2)	
EQST 201	4
EQST 202	4
EQST 204	4
EQST 354	4
EQST 401	4
EQST 404	4
Total Credits	**30**

INDUSTRIAL TECHNOLOGY MANAGEMENT OPTION
(Revised from page 73 of 2003-04 Catalog)

Elective credits required for this area	2
Total Credits	**2**

BUS 201	3
Take 1 from these 2:	3
BUS 329 (3)	
BUS 426 (3)	
IT 120	4
IT 130	4
IT 140	4
IT 222	3
IT 235	4
IT 240	3
IT 241	3
IT 330	3
Total Credits	**34**

Bachelor of Science: Elementary Education

Overview of Revisions to Requirements

Revision to <u>General Education Requirements</u> for Elementary Education effective 2004-05 Academic Year:
(page 55 of 2003-04 Catalog)

- **Delete requirement of one of these two courses:**
  MATH 115 Mathematics for Elementary Teachers (5)
  MATH 116 Mathematics for Elementary Teachers (4)
- **Replace with requirement of:**
  MATH 106 Geometry (4)
- **Revise Total General Education Credits: 34**

Revision to <u>Elementary Education Requirements</u> effective 2004-05 Academic Year:
(page 78 of 2003-04 Catalog)

- **Add the following course to Professional Education Requirements:**
  ED 255 Contemporary American Indian Education (3)
- **Replace requirement of MATH 115 (5) with the following (Program Requirements-Arts & Sciences):**
  MATH 100 Descriptive Statistics (1)
  MATH 105 Number Theory (4)

See the following page for all requirements for BS: Elementary Education.

BS: Elementary Education
Degree Requirements for 2004-05 Academic Year

(Revised from page 78 of 2003-04 Catalog)

GENERAL EDUCATION

Foundational Courses…13 credits	
ENG 101[1]	3
ENG 131[1]	3
COMS 101	3
MATH 106[1]	4

Arts & Humanities…6 credits	
Select 1 from these 8:	3
ENG 161 (3) ENG 165 (3) ENG 162 (3) ENG 166 (3) ENG 163 (3) ENG 167 (3) ENG 164 (3) ENG 168 (3)	
Select 1 from these 13[1]:	3
ENG 204 (3) ENG 273 (3) ENG 259 (3) ENG 274 (3) ENG 263 (3) ENG 275 (3) ENG 264 (3) ENG 276 (3) ENG 265 (3) ENG 279 (3) ENG 266 (3) ENG 280 (3) ENG 267 (3)	

Behavioral & Social Sciences…9 credits	
Select 1 from these 3[1]:	3
ANTH 105 (3) PSY 100 (3) SOC 115 (3)	
Select 1 from these 7:	3
HIST 101 (3) HIST 274 (4) HIST 102 (3) HIST 380 (3) HIST 225 (3) HIST 381 (3) HIST 240 (3)	
Select 1 from these 3:	3
HIST 111 (3) HIST 112 (3) POLS 121 (3)	

Natural Sciences…6 credits	
BIO 101	3
GEOL 101	3

Total General Education Credits   **34**

PROGRAM REQUIREMENTS: ARTS & SCIENCES

ART 101	2
CHEM 101	3
FA 101	3
GEOG 102	3
HIST 371	3
MATH 100 (1)	1
MATH 105 (4)	4
MUS 101 (2)	2
PHYS 101 (3)	3

Total Arts & Sciences Credits   **24**

PROFESSIONAL EDUCATION

ED 120[1]	2
ED 234	3
ED 250[1]	3
ED 255	3
ED 270	3
ED 331	3
ED 341	2
ED 360	3
Concurrent enrollment in these 5:	10
ED 371 (2) ED 372 (2) ED 373 (2) ED 376 (2) ED 378 (2)	
ED 379	2
ED 380	1
ED 381	3
HHP 231	1
HHP 374	2
Select 1 from these 3:	3
HHP 241 (3) HHP 245 (3) HHP 256 (3)	
ED 472	**12**

Total Professional Education Credits   **56**

MINOR/OPTION

Select 11-14 credits for Minor or Option Area

Total Minor/Option Area Credits   **11-14**

[1] Grade of C or better in these courses required for TEP.

Page 76 of 2003-04 Catalog:
Achievement of a 2.50 GPA required for a minimum of 48 credits attempted required for TEP. A 2.50 GPA must be maintained to continue in TEP.

INSTRUCTIONAL TECHNOLOGY OPTION
(New Degree Program effective 2004-05 Academic Year)
An "Instructional Technology Option" transcript notation is available with BS: Elementary Education only.

Elementary Education graduates with this option will not only be prepared to integrate technology effectively into their own curriculum and instruction, but will also be able to help others more effectively integrate technology to enhance learning and teaching in K-8 classrooms.

COMS 101	1
Select 1 from these 2:	4
COMS 115 (4) or COMS 102 (1) & 104 (1) & 108 (1) & 109 (1)	
COMS 210	3
COMS 234	2
COMS 240	1
COMS 334	2
COMS Elective	1
ED 234	4
Total Credits	**18**

MATHEMATICS OPTION
(Revised from page 73 of 2003-04 Catalog)
A "Mathematics Option" transcript notation is available with BS: Elementary Education only.

All Mathematics Option courses should be taken in addition to those required for the Elementary Education Major. However, these additional courses can be used to fulfill the elective requirements in this Major.

MATH 112	4
MATH 131	4
MATH 232	4
Select 1 from these 6:	4
MATH 101 (4)	
MATH 102 (4)	
MATH 103 (4)	
MATH 107 (4)	
MATH 108 (4)	
MATH 109 (4)	
Take 1 from any 200 level or higher MATH course	4
Total Credits	**20**

Bachelor of Science: Secondary Education

Degrees On Moratorium

The following degrees as listed in the 2003-04 Catalog are "On Moratorium" effective the 2004-05 Academic Year.
Check with the Vice Chancellor for Academic Affairs regarding continuing availability of these degrees and courses.

Bachelor of Science: Secondary Education
English Broadfield (page 88)
Music K-12 Major (page 95)

Revisions to Requirements

Revisions to <u>General Education Requirements</u> for Secondary Education effective 2004-05 Academic Year
(page 55 of 2003-04 Catalog)
- **Delete requirement of MATH 104 (3) or higher level Math course**
- **Replace with MATH 101 Logic (4) or higher level Math course**
- **Revise Total General Education Credits: 35-36**

Revisions to <u>Professional Education Requirements</u> for Secondary Education effective 2004-05 Academic Year
(page 82 of 2003-04 Catalog)
- **Add requirement of the following course:**
  ED 255 Contemporary American Indian Education (3)
- **Revise Total Professional Education Credits: 39-44**

Secondary Education
Professional Education Requirements for 2004-05 Academic Year

PROFESSIONAL EDUCATION

ED 120	2
ED 250	3
ED 255	3
ED 331	3
ED 341	2
ED 425	3
HHP 231	1
Methods Course	3-4
Select 1 from these 3:	3
HHP 241 (3)	
HHP 245 (3)	
HHP 256 (3)	

Professional Education Credits   **23-24**

STUDENT TEACHING

ED 473	10-15

Student Teaching Credits   **10-15**
_____

TOTAL Secondary Education
Professional Education Credits   **34-39**

BS: SECONDARY EDUCATION
New & Revised Majors

MATHEMATICS MAJOR

(Revisions to page 94 of 2003-04 Catalog)

GENERAL EDUCATION (2003-04 Addendum page 4)

Select 1 from these 5:	4
MATH 101 (4) MATH 108 (4) MATH 103 (4) MATH 112 (4) MATH 107 (4)	
PHYS 233	4
Select 1 Science from BIO, CHEM, or GEOL rubric	3-4

General Education Credits   35-36

MATHEMATICS MAJOR

COMS 111	3
MATH 131	4
MATH 201	4
MATH 202	4
MATH 203	4
MATH 232	4
MATH 260	4
MATH 341	4
MATH 342	4
MATH 343	4

Major Credits   39

PROFESSIONAL EDUCATION (2003-04 Addendum page 10)

ED 120	2
ED 250	3
ED 255	3
ED 331	3
ED 341	2
ED 425	3
HHP 231	1
MATH 351	4
Select 1 from these 3:	3
HHP 241 (3) HHP 245 (3) HHP 256 (3)	

Professional Education Credits   24

ELECTIVE REQUIREMENTS

Complete 16-21 credits from any catalog courses

Elective Credits   16-21

STUDENT TEACHING

ED 473	10-15

Student Teaching Credits   10-15

_____

TOTAL Credits Required   128

MATHEMATICS BROADFIELD MAJOR

(New Degree Program effective 2004-05 Academic Year)

GENERAL EDUCATION (2003-04 Addendum page 4)

Select 1 from these 5:	4
MATH 101 (4) MATH 108 (4) MATH 103 (4) MATH 112 (4) MATH 107 (4)	
PHYS 233	4
Select 1 from BIO, CHEM, or GEOL rubric	4

General Education Credits   35-36

MATHEMATICS BROADFIELD MAJOR

COMS 111	3
MATH 131	4
MATH 201	4
MATH 202	4
MATH 203	4
MATH 232	4
MATH 260	4
MATH 341	4
MATH 342	4
MATH 343	4
Select 1 from these 2:	4
MATH 401 (4)	
MATH 433 (4)	
Select 1 from these 2:	4
MATH 441 (4)	
MATH 442 (4)	
Select 1 from these 2:	4
MATH 443 (4)	
MATH 444 (4)	

Major Credits   51

PROFESSIONAL EDUCATION (2003-04 Addendum page 10)

ED 120	2
ED 250	3
ED 255	3
ED 331	3
ED 341	2
ED 425	3
HHP 231	1
MATH 351	4
Select 1 from these 3:	3
HHP 241 (3)	
HHP 245 (3)	
HHP 256 (3)	

Professional Education Credits   24

ELECTIVE REQUIREMENTS

Complete 4-9 credits from any catalog courses

Elective Credits   4-9

STUDENT TEACHING

ED 473	10-15

Student Teaching Credits   10-15

TOTAL Credits Required   128

BS: SECONDARY EDUCATION
New & Revised Minors

LIBRARY MEDIA K-12 MINOR
(Revised from page 100 of 2003-04 Catalog,
effective 2003-04 Academic Year, but approved
after 2003-04 Catalog was printed)

ED 360	3
ENG 360	3
LIB 461	3
LIB 464	3
C&I 480[1]	3
C&I 483[1]	2
C&I 484[1]	3
C&I 488[1]	2
Select 1 from these 2:	3
C&I 485[1] (3) LIB 469 (3)	
Total Credits	**25**

[1] **Class offered through UM-Missoula**

MATHEMATICS MINOR
(Revised from page 94 of 2003-04 Catalog)

GENERAL EDUCATION

PHYS 233	4

MATH 131	4
MATH 201	4
MATH 232	4
MATH 260	4
MATH 341	4
MATH 342	4
MATH 343	4
MATH 351	4
Total Credits	**32**

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AAS: EQUINE STUDIES
Revised

</div>

Established in 1984, the American Riding Instructor Certification Program (ARICP) is offered by the American Riding Instructors Certification (ARIA) to recognize and certify outstanding teachers of horseback riding who instruct their students in a safe, knowledgeable, and professional manner.

The University of Montana-Western announced that successful completion of ARIA Level certification will be mandatory in order to obtain an Equine Management Option of the AAS: Equine Studies.

Western will also be offering ARIA certification examinations Levels I-III in the following disciplines on a voluntary basis: Driving, Hunt Seat, Show Jumping, Recreational Driving, and Stock Seat Equitation. For further information, contact Olie Else, (406) 683-7539, i_else@umwstern.edu, or John Xanthopoulos, (406) 683-7018, j_xant@umwestern.edu.

GENERAL EDUCATION

BUS 210	2
BUS 217	3
COMS 101	3
ENG 101	3
ENG 131	3
MATH 101[1] or higher level MATH	4
POLS 121	3
[1] MATH 131 recommended for Equine Management Option	

Gen Ed Credits   **21**

EQUINE STUDIES CORE

EQST 101	3
Select 1 from these 2:	3
EQST 102 (3)	
EQST 104 (3)	
EQST 200	4
EQST 201	3
EQST 202	3
EQST 203	3
EQST 204	3

Core Credits   **22**

OPTION

Select 1 Option from:	30
Equine Studies Management Equine Studies Science (see following page)	

Option Credits   **30**

TOTAL Credits Required   **73**

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AAS: EQUINE STUDIES
Option Areas

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EQUINE MANAGEMENT OPTION CORE

BUS 201	3
BUS 202	3
BUS 241	3
BUS 281	3
BUS 347	3
ECON 252	3
Option Credits	**18**

EQUINE MANAGEMENT PROFESSIONAL ELECTIVES

Select 12 credits from:	12
ANTH 105 (3)	
ART 380 (3)	
BUS 242 (3)	
BUS 282 (3)	
COMS 135 (3)	
COMS 234 (3)	
COMS 236 (3)	
ENVS 260-269 (2-4)	
HHP 231 (1)	
HTR 112 (3)	
HTR 143 (3)	
HTR 204 (3)	
PSY 100 (3)	
SPAN 101 (5)	
Any EQST course not taken In Equine Studies Core	
Professional Elective Credits	**12**

Equine Management Option
Total Credits…………………………..30

EQUINE SCIENCE OPTION CORE

BIO 101	3
BIO 151	4
BIO 262	4
BIO ~~351~~ 251	~~3~~ 4
CHEM 131	4
Option Credits	**~~18~~ 19?**

EQUINE SCIENCE PROFESSIONAL ELECTIVES

Select 12 credits from:	12
BIO 150 (4)	
BIO 152 (4)	
CHEM 132 (4)	
ENVS 260-269 (2-8)	
GEOL 150 (4)	
GEOL 226 (4)	
GEOL 230 (4)	
HHP 231 (1)	
PHYS 101 (3)	
PHYS 239 (3)	
PHYS 240 (3)	
Any EQST course not taken in Equine Studies Core	
Professional Elective Credits	**~~12~~ 11?**

Equine Science Option
Total Credits…………………………30

ASSOCIATE OF APPLIED SCIENCE: *NATURAL HORSEMANSHIP*

(New Degree Program effective 2004-05 Academic Year)

The Associate of Applied Science in Natural Horsemanship degree will provide students with the opportunity to develop a strong foundation in equestrianism as well as in the basics of Natural Horsemanship—the art of working with horses in a manner that incorporates an understanding of the horse's behavior, instincts and personality. Students will be introduced to widely accepted equine management principles, and they may choose an option in either Natural Horsemanship Management or Natural Horsemanship Science.

GENERAL EDUCATION

POLS 121	3
COMS 101	3
ENG 101	3
ENG 131	3
MATH 101 or higher level Math	4

Gen Ed Credits   **16**

NATURAL HORSEMANSHIP CORE

EQST 101	3
EQST 155	4
EQST 200	4
EQST 201	3
EQST 202	3
EQST 252	4
EQST 254	4
EQST 255	4

Core Credits   **29**

OPTION

Select 1 Option from:	27
Natural Horsemanship Management Natural Horsemanship Science (see following page)	

Option Credits   **27**

_____

TOTAL Credits Required   **72**

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AAS: NATURAL HORSEMANSHIP
Option Areas

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**NATURAL HORSEMANSHIP MANAGEMENT
OPTION CORE**

BUS 201	3
BUS 241	3
BUS 281	3
BUS 347	3
ECON 252	3
Total Credits	**15**

**NATURAL HORSEMANSHIP SCIENCE
OPTION CORE**

BIO 101	3
BIO 151	4
BIO 262	4
CHEM 131	4
Total Credits	**15**

**NATURAL HORSEMANSHIP MANAGEMENT
PROFESSIONAL ELECTIVES**

Select 12 credits from:	12
ART 380 (3)	
BUS 202 (3)	
BUS 242 (3)	
BUS 282 (3)	
COMS 135 (3)	
COMS 236 (3)	
ENVS 260-269 (2-4)	
HHP 231 (1)	
HTR 112 (3)	
HTR 143 (3)	
HTR 204 (3)	
SPAN 101 (5)	
Any EQST course not taken in Natural Horsemanship Core	
Total Credits	**12**

**NATURAL HORSEMANSHIP SCIENCE
PROFESSIONAL ELECTIVES**

Select 12 credits from:	12
BIO 150 (4)	
BIO 251 (3)	
CHEM 132 (4)	
ENVS 260-269 (2-4)	
GEOL 150 (4)	
GEOL 230 (4)	
HHP 231 (1)	
PHYS 239 (3)	
Any EQST course not taken in Natural Horsemanship Core	
Total Credits	**12**

**Natural Horsemanship Management
Option Total Credits……………27**

**Natural Horsemanship Science
Option Total Credits……………27**

Course Descriptions

**Following are revised course descriptions for courses listed in the 2003-04 Catalog,
as well as new courses effective for the 2004-05 Academic Year.
Please check carefully for any Prereq or Coreq changes.**

BIOLOGICAL SCIENCES

*A prerequisite for any course with a BIO rubric is documented mathematical ability equivalent to MATH 007 Algebra.
Ability can be demonstrated by appropriate college/university credit or UM-Western Math Placement Exam score.*

BIO 101 INTRODUCTION TO LIFE SCIENCE (4)
Unifying features of living organisms; diversity of life forms; history and relevance of the study of biology within human society. Lab included. Lab fee. Prereq: equivalent of MATH 007 or higher.

BIO 150 CONSERVATION BIOLOGY (4)
The impact of stochastic processes (environmental, catastrophic, genetic, and demographic) on small populations (i.e. threatened and endangered species) will be examined. Discussions cover habitat and population fragmentation, corridors, biodiversity and its measurement, endangered species policy and law, and case studies extinction; for the latter, ultimate and proximate causal factors of extinction will be discussed. Lab fee. Students without a background in high school biology may want to consider taking BIO 101 before enrolling in this course. Prereq: equivalent of MATH 007 or higher, or c/i. (spring)

BIO 151 ZOOLOGY (4)
Survey of development, physiology, behavior, ecology, and evolution of representative phyla within the animal kingdom. Lab included. Lab fee. Students without a background in high school biology may want to consider taking BIO 101 before enrolling in this course. Prereq: equivalent of MATH 007 or higher, or c/i. (fall)

BIO 152 BOTANY (4)
Upon successful completion of this course, students will be familiar with the basic morphology, physiology, cytology, ecology, and taxonomy of plants and algae. They will also exhibit competence in plant laboratory techniques including experimental design, statistical analysis, and scientific report writing. Lab included. Lab fee. Students without a background in high school biology may want to consider taking BIO 101 before enrolling in this course. Prereq: equivalent of MATH 007 or higher, or c/i. (spring)

BIO 262 MICROBIOLOGY (4)
This course focuses on the structure and biology of microorganisms including *Archaea*, bacteria, fungi, algae, protozoans, and viruses. A partial list of lecture topics includes microbial growth and nutrition, metabolism, microscopy, microbial diseases, and food microbiology. The laboratory investigates many aspects of microbiology including microbial diversity, ecology, water sampling, antibiotic susceptibility, enrichment cultures, as well as more exciting topics. Lab included. Lab fee. Students without a background in high school biology may want to consider taking BIO 101 before enrolling in this course. (fall)

BIO 341 CELL & MOLECULAR BIOLOGY (4)
This course examines many aspects of current cell and molecular biology in detail. Much attention is given to the structure and function of cellular macromolecules as well as the mechanisms underlying the central dogma of molecular biology. Other topics include biological membranes, cellular metabolism, enzymes, signal transduction, and much more. The exciting laboratory portion of the course allows students to perform novel projects using current tools and techniques to isolate genes, express these genes, and identify where in the cell the expressed proteins are localizes. Students will become familiar with many techniques including DNA isolation, gene cloning, agarose gel electrophoresis, restriction enzyme analysis, western blot analysis, cell fractionation, centrifugation, and many more. Lab included. Lab fee. Prereq: BIO 151 and 152, or c/i. (spring)

BIO 343 GENETICS & EVOLUTION (4)
This course focuses on all aspects of genetics from Mendelian inheritance to molecular genetics and genomics. Students will become familiar with mechanisms of inheritance and explore how inheritance of genes influences all aspects of life. The alteration of genes over evolutionary time and its effects on life will also be examined. The laboratory portion of this course will investigate genetic principles using many techniques including mutant screens in yeast, molecular genetic tools, and computer databases. Lab fee. Prereq: BIO 151 and 152. (spring)

BIO 471 WILDLIFE ECOLOGY & MANAGEMENT (4)
This course will provide students with a foundation in the science of wildlife biology. The theory portions of the course will cover the fundamentals of wildlife science including the following: population growth models, experimental design of field studies, data collection and analysis, habitat management and alteration, wildlife laws (including mandates, the Code of Federal Regulations, and the realities of implementation), wildlife administration and planning (including habitat conservation plans [HCP's]), farm and rangeland management with respect to wildlife, forest management and wildlife, national park and refuge management and wildlife, urban wildlife, exotic species, endangered species management of game and non-game species, wildlife exploitation (including hunting, trapping, and illegal take), and the economics of wildlife. The field portions of the course will include projects designed to provide students with a look at the realities, the difficulties, and sometimes the thrill of field research in wildlife biology. An additional and significant goal of the course will be to expose students to the primary wildlife literature. Lab fee. Prereq: BIO 150, 151, 152, and MATH 201, 232. (fall/even-numbered years)

BUSINESS

BUS 217 BUSINESS & ELECTRONIC COMMUNICATIONS (3)
In this course, students will write messages for the business setting, including letters, memos, short reports, and e-mail messages. They will prepare and present messages orally, incorporating electronic audio/visual support. Students will also explore the role of the Internet in communication (including e-commerce) and learn techniques for improving international/ intercultural communication. Students will be evaluated by a writing portfolio, oral presentations, collaborative writing assignments, examinations, a practice job interview, and participation in class activities. Prereq: COMS 101, ENG 101 and 131.

BUS 317 ADVANCED BUSINESS COMMUNICATIONS (4)
Students will learn and integrate fundamental principles and interrelationships within the context of real-world business communication issues. The course emphasizes an understanding of the important methods, terms, theories, and findings in the field of Management Communications. The course will cover technological communications and communicating in intercultural and international contexts. The course will provide experiential instruction through active participation in an interactive classroom environment. The teaching methodology will focus on motivating students in gaining impact assessment of their communications, using a variety of instructional, assessment, and foundation techniques. Assessment will be through written exams, evaluation of field-based and classroom assignments, and presentations. Prereq: BUS 217, or c/i.

BUS 329 HUMAN RESOURCE MANAGEMENT (3)
The course covers strategic human resource planning, job analysis, recruitment and selection, evaluating performance, compensation systems and governmental regulations, behavioral tools and techniques dealing with personnel problems, employee stress management, technostress, and organizational burnout, and labor-management relations. The course also covers contemporary issues in human resource management, including global human resource management and analysis and evaluation of collective bargaining issues. Prereq: BUS 325, or c/i.

BUS 426 STRATEGIC MANAGEMENT (3)
The course will deal with theory and practice of strategic management covering strategy formulation, implementation, and evaluation in various environmental contexts. In today's hypercompetitive marketplace, future managers and leaders must learn to formulate and adapt strategy to become powerful competitors to survive. This course will analyze ingredients of a good strategy and effective methods for implementing that strategy. Strategic Management prepares students to anticipate and respond to the accelerating pace of global competition and technological innovation. This course will benefit future leaders in providing tools to formulate and evaluate new competitive strategies, determine how to lay the groundwork for change, and execute their action plans. Prereq: BUS 325, or c/i.

BUS 466 INTERNATIONAL MANAGEMENT (3)
The transformational forces of globalization and technology are radically challenging competitive strategies, business operations, and organizational structures as they are known today. Montana's economy is intimately tied to global business trends, hence this course is intended to provide a unique learning opportunity that is designed to broaden individual horizons, break parochial perspectives, and challenge conventional wisdom. The course will cover theory and practice of international management in a global environment, a firm grasp of Internet-based workgroup capabilities, an in-depth comprehension of global business challenges and opportunities, deeper insights into critical management issues, and greater cross-cultural understanding--in essence, a management tool for practical application for UMW graduates. This course will challenge participants to realize their full leadership potential and become outstanding future managers in the global business environment. Prereq: BUS 425, or c/i.

CHEMISTRY

A prerequisite for any course with a CHEM rubric is documented mathematical ability equivalent to MATH 007 Algebra. Ability can be demonstrated by appropriate college credit or UM-Western Math Placement Exam score.

CHEM 101 INTRODUCTION TO CHEMISTRY (4)
This class is designed for non-science majors. Students will study the fundamental principles of chemistry in the context of real-world applications to atmospheric and water chemistry. Major fundamental topics covered include atomic structure, chemical bonding, chemical reactions, radiant energy, thermodynamics, acids and bases, and solutions. Most applications are cross-disciplinary with physics, biology, and/or earth sciences. Student learning is evaluated through homework, exams, labs, fieldwork, and research papers. Lab fee. Prereq: equivalent of MATH 007 or higher.

CHEM 131 GENERAL CHEMISTRY (4)
Fundamental principles of modern chemistry. Major areas of emphasis include stoichiometry, gas laws, thermochemistry, atomic structure and periodicity, chemical bonding, molecular geometry, and solutions. Lab included. Lab fee. Prereq: equivalent of MATH 007 or higher. (fall)

EDUCATION

ED 326 INFANT/TODDLER DEVELOPMENT & GROUP CARE (4)
Provides a basic developmental foundation for the student. Examine research, theories, issues, developmental stages, and the application of these in relationship to the child from birth through 3 years.

ED 475 TEACHING PRACTICUM (V 6-15)
Available to candidates who meet the following conditions: 1) hold at least a bachelor's degree in an area that is available for teaching licensure in the State of Montana and is an approved Teacher Education Major or Minor at UM-Western, 2) have completed all UM-Western requirements for completion of the Teacher Education Program with the exception of student teaching, 3) have obtained at least a Class 5 license in the field for which they are seeking program completion, and 4) have employment in an appropriate K-12 setting in the licensure field. Candidates will be supervised for 2 semesters. A portfolio and an exit presentation are required for program completion.

ED 476 LICENSURE INTERNSHIP (V 1-2)
Available for candidates enrolled in the Montana Teaching Endorsement Internship Program through UMW. Eligible candidates must hold at least a Montana Class 2 teaching license, be employed in a position in the endorsement area they are seeking, and be accepted for participation by the UM-Western Office of Field Experiences. Candidates enroll in this course every fall and spring semester until the endorsement coursework is complete. A portfolio and an exit presentation are required at the end of the experience. An additional delivery fee is required.

ED 479 TEACHING INTERNSHIP (V 6-15)
Enrollment in this course requires instructor approval. It is meant for those candidates who are employed by Montana school districts, but who are ineligible for other internship courses. Examples would include candidates with Class 4 licenses seeking to finish degrees and upgrade their license, or those teachers involved in the OPI Special Education Endorsement Program. Available to candidates who meet the following conditions: 1) are employed by a Montana school district in an area available for licensure and approved as a Teacher Education Major or Minor at UM-Western, 2) have completed all degree and/or endorsement coursework except student teaching, and 3) provide evidence of successful teaching experience in the field of employment. Prereq: c/dfe.

EDUCATIONAL OPPORTUNITY PROGRAM

EOP 101 LEARNING STRATEGIES FOR HIGHER EDUCATION (2)
Upon completion of this course students will be familiar with various types of learning strategies that will help with study skills, note-taking, textbook reading, test-taking, writing strategies, time management, stress management, university skills in general, as well as library use, educational technologies, and career exploration. Students will be able to immediately apply these skills to coursework in their current classes.

EOP 102 WRITING STRATEGIES FOR HIGHER EDUCATION (2)
Upon completion of this course students will be familiar with various types of writing strategies that will help with writing collegiate level research papers, utilizing technology as a research tool, letters, resumes, critiques, and essay exams. Students will be able to immediately apply these skills to coursework in their current classes.

EOP 204 PEER TUTORING (3)   (Previously SS rubric)
Review and application of processes used in small group and individual communication and tutoring. Processes reviewed include individualized education planning, academic skills building, presentation techniques, and information processing models. Students are expected to apply tutoring techniques, present workshops, and assist in staffing the peer tutoring center. Oral presentation and written exam. Lecture and small group discussion. Prereq: Interview with instructor and recommendation of faculty. (fall/spring)

ENGLISH

The following English courses are "On Moratorium" effective 2004-05 Academic Year.
These courses will not be offered until further notice.
Contact the English Department for appropriate substitute courses.

ENG 262 Women's Literary Traditions (3)
ENG 304 Playwriting/Scriptwriting Workshop (3)
ENG 335 Literature of the Americas (3)
ENG 337 Writers of the American West (3)

ENG 338 Montana Writers (3)
ENG 350 Professional Speaking (3)
ENG 404 Advanced Playwriting/Scriptwriting Workshop (3)
ENG 430 Legends of King Arthur (4)

ENVIRONMENTAL SCIENCE

ENVS 269 WILDLANDS SKILLS: MAP, COMPASS, & GPS (2)
Students will develop skills in map reading, use of a magnetic compass, altimeters, and Global Position System (GPS) receivers. Students will learn to describe a position by use of Latitude and Longitude, Universal Transverse Mercator, and U.S. Public Land Survey grid systems. Students will apply learned GPS skills to execute traverses of land parcels and determine the location of private and public land ownerships. Students will develop skills in CD-Rom map programs and the downloading of GPS receiver waypoints and traverses onto CD-Rom maps. Learned skills will be practiced on local field trips

ENVS 329 NATURAL RESOURCE ISSUES (3)
Students in this course will be investigating current natural resource issues of the northwestern United States, as well as global natural resource issues. Students will explore the philosophical, ecological, economic, educational, cultural, and recreational values that affect human perceptions of these complex issues through a series of required readings, in-class discussions, and student projects/presentations. Guest speakers will be invited to share their views on particular issues and to answer questions from students. Students will also be exposed to national environmental policy and law. Evaluation will be based on classroom discussions, issue analysis reports, and papers on resource issues. Prereq: BIO 150, CHEM 131, and GEOL 150, or c/i. (spring)

ENVS 348 SOIL SCIENCE (4)
This course introduces students to soils and their properties as components of landscapes and ecosystems. Students study the interaction of the basic soil-formation parameters: geologic materials, climate, biological components, land surface, and time. Lectures, labs, and research activities focus on soil-forming processes, soil morphology, soil classifications, soil engineering properties, natural soil landscapes, and soil nutrient cycling. A large part of the class involves field examination, description, and classification of soils and their landscapes. Students will demonstrate their understanding of the material in exams, research reports, lab and field activities, and a major field project applying soils knowledge to a problem in environmental sciences. Lab fee. Prereq: demonstrated math ability at MATH 007 or higher, CHEM 131 and 132, or c/i. (fall/even-numbered years)

ENVS 429 ENVIRONMENTAL FIELD STUDIES (4)
Students taking this field-based class will work as a team to design and perform field research, and produce written and oral reports concerning a research, natural resource inventory, and/or environmental assessment problem. A multi-disciplinary approach to problem solving is incorporated. Student evaluation will be based on quantity and quality of personal contribution to the project effort, ability to function in a team environment, peer review, effectiveness of field approach, and demonstrations of written and oral communication skills. May have a service learning component. Lab fee. Prereq: MATH 232 and Junior/Senior standing, or c/i. (fall)

EQUINE STUDIES

EQST 155 INTRODUCTION TO GROUNDWORK (4)
The primary objective of this course will be to gain the horse's confidence by approaching it as a partner as opposed to a predator, while at the same time making the horse respect the rider's personal space. Students will learn about the various types of tools used in equine groundwork, which include body language, energy management, control of emotions, and the basic principles of approaching/retreating, successive phases, and giving in to pressure. Further into the semester, students will explore the different types of groundwork approaches and how they affect the horse, the importance of training both left-handed and right-handed, and will finally learn how to put on a halter with the horse's cooperation.

EQST 204 EQUESTRIAN FACILITIES MANAGEMENT (3)
This course will examine the evolution and behavior, conformation and action, routine preventive measures, nursing the sick horse, first aid, and management of breeding stock. The course will also make the most of "your" investment in horses, facilities, equipment, and time. Through the course the students will begin a variety of income-generating activities and programs. The students will learn to manage promotional events that create interest and bring business as well as save cash on stable management, horse care, and equipment. Furthermore, this course will examine in depth handling horses, the daily stable

routine, stable/ranch work, exercising, staff and the law, health and safety, saddlery and tack, preparing horses for use, and traveling horses. This course will also compare and analyze the differences between the competition horse vs. the leisure horse.

EQST/HHP 222 ELEMENTS OF RODEO (2)
The Elements of Rodeo courses focus on National Intercollegiate Rodeo Association Events: bareback riding, steer wrestling, saddle bronc riding, tie down roping, team roping, goat tying, breakaway roping, and barrel racing. Each semester rules governing a selected event, techniques of competition, and responsibilities of NIRA athletes are presented. Students will apply fitness and wellness concepts, injury prevention measures, basic injury care, and winning physical and mental strategies to human and equine athletes competing in the event.

EQST 252 PRACTICE IN GROUNDWORK (4)
The main objective of this course will be to achieve a high level of cooperation with the horse while working in close quarters with a minimum 3-yard rope and bridle or halter. On the ground, students will learn to find the horse's release, relaxation, and attention at all times during a session and will begin to work on controlling the gait and direction of a horse on an empty field with no obstacles. Over the course of the semester, students will begin to use simple obstacles in order to increase groundwork

capabilities and will be introduced to going forward and backward in certain drills. The basics of "horse mobilization" will be introduced at the end of the course, whereby students will learn how to mobilize each part of the horse independently of the other. This will set the foundation to be able to effectively put a horse into a trailer in the successive course, EQST 254 Advanced Round-Pen Groundwork.

EQST 254 ADVANCED ROUND-PEN GROUNDWORK (4)
The primary objective of this course will be to take the skills and techniques learned in EQST 105 and EQST 252 and perfect them through practice in the more confined are of the round-pen. Working in the round-pen on foot, students learn to find the horse's points of release, relaxation, and attention while moving the horse away and bringing it closer, both un-tethered and using a rope. Students will also work on controlling the speed and direction of the horse in a precise route and for every gait, un-tethered in the round-pen, using a rope, and with and without obstacles. Also explored in this course will be the link between groundwork and work on horseback.

EQST 255 INTRODUCTION TO HORSEBACK RIDING (4)
The primary objective of this course will be to introduce to the student the basic principles of horseback riding. Having already accomplished many hours of groundwork, students prepare to get into the saddle and will learn more about equine equipment and especially about the saddle, bridle, and protective equipment and their proper maintenance. Methods of communication available to the rider are to be explored extensively before the student is to ride and the students will learn the qualities required to be a leader in the saddle. On horseback with bridle or halter and a single active rein, the student will learn to effectively find the horse's points of release, relaxation, and attention at all times.

EQST 351 HORSEBACK PRACTICE (4)
Students will be expected to learn and demonstrate complex skill development in a variety of areas including being able to control the gait and direction of a horse at three distinct paces, independently of other horses on a field without obstacles. Simple obstacles will be introduced later in the course. Students will continue their work on "horse mobilization" and will be able to load a horse into a trailer by the end of the semester without causing any stress to the horse.

EQST 352 ADVANCED HORSEBACK (4)
In this advanced level course students will develop a variety of knowledge-based skills. These include learning what it means to act as a leader on horseback and will develop the ability to recognize the signs of relaxation on horseback. Students in this course will be introduced to the principles of aid minimization, how it is achieved, and the importance of its different phases. Students will continue to work on maintaining the horse's release, relaxation and attention during the session, and on mobilizing the different parts of the horse independently. In this advanced stage of horseback training, students will also work on controlling the speed and direction of a horse for every gait and on a precise route, in the ring and outdoors, on a field without obstacles and while navigating obstacles. Prereq: EQST 255.

EQST 353 INTRODUCTION TO HORSE TRAINING (4)
This course involves primarily young horse training and focuses on starting and restarting horses that are two years and older, both on the ground and under saddle. It will also focus on knowledge-based skills that include developing a natural foundation for the horse by keeping the horse mentally involved, build intelligence and enthusiasm, prevent blow-up, and increase interest, bravery, and responsiveness. The course will also cover

topics such as horses that pull back, are hard to catch, shoe, doctor, inject, or bridle, are over-excitable, aggressive, kick, bite, rear, buck, etc., and show the student how to help these horses become more mentally, emotionally, and physically balanced.

EQST 354 HERD BEHAVIOR (4)
In this course students will develop knowledge-based skills that include being introduced to horse behavior in a herd, the hierarchy principles in a herd, herd management as well as the fundamentals of a cow-calf operation. Students will have the unique opportunity of participating in a herding event on the ranch. In the later part of the course, students will begin to understand how to manage the "herd effect" to facilitate rider independence during a session.

EQST 400 NATURAL HORSEMANSHIP INTERNSHIP (V 1-15)
During this internship, the student will apply the skills and techniques learned through the courses of the Natural Horsemanship program. A laboratory field experience providing a practical application of acquired knowledge and theory in a professional setting. Students serve under the guidance of professional personnel with the support of a University faculty advisor. Students will complete a series of written periodic reports, a portfolio in the form of a final comprehensive report on their experience, and a final oral presentation of their internship to the department faculty as part of their exit interview. Prereq: Senior standing and c/i. (fall/spring/summer)

EQST 401 ADVANCED HORSE CARE & NUTRITION (4)
In this knowledge-based course students will develop skills that will assist them in learning about equine nutrition from birth to adulthood and the essential nutrients critical to equine health and longevity. Students will also learn to identify dental problems, (spilling feed, etc.) and will gain experience with feeling wolf teeth, ramps, and sharp points as well as with basic dental treatments. Basic hoof trimming of young horses and basic shoe replacement will be taught in the course and students will also receive a shoeing course from a professional farrier and get hands-on experience with hoof balance, corrective shoeing, hoof pads, hot shoeing, cold shoeing, and maintaining and monitoring shoeing book and calendar. Students will also work with the following categories of equine specialists: osteopath, joint and articulation specialists, respiratory specialists, intestinal specialists, skin specialists, and eye specialists. Prereq: EQST 201 and 202.

EQST 404 CONTEMPORARY ISSUES IN EQUINE BUSINESS (4)
As a capstone course, the student will learn an integrated set of business skills necessary for anyone who wishes to pursue a career in the equestrian business. Some of the topics to be covered include: strategic vision; ranch management, finance, and accounting; horse import/export; sales and marketing; client and public relations. Students will have the opportunity to intern at a ranch, working in the administrative offices at LaCense Montana, where they will learn about the day-to-day operations of a ranch. Prereq: Senior standing, or c/i.

EQST 452 NATURAL HORSEMANSHIP INSTRUCTION (4)
Covered in this course will be the basics of natural horsemanship pedagogy and the benefits of the workshop model for natural horsemanship; training techniques for group leadership and management; techniques for teaching natural horsemanship on horseback; time management for groundwork and for work on horseback; the importance of the natural horsemanship approach in managing rider apprehension; adaptation of horses to suit rider

level and the specifics of "difficult" horses. Prereq: Senior standing, or c/i.

EQST 453 CLINIC & DEMONSTRATIONS (4)
Students will explore the pedagogic material taught in EQST 452 but the class will pay particular attention to the benefits of the workshop model for natural horsemanship. The course will examine more closely how clinics and demonstrations are organized while covering the following topics: creating group dynamics; choosing a workshop objective; organizing a session and summarizing at the end of a session. Students will learn to take responsibility for the many and various tasks that go into organizing clinics and demonstrations and which include travel planning, packing, horse care during travel, arrival procedures, arena set-up, booth set-up, etc. Prereq: EQST 452.

GEOLOGY

A prerequisite for any course with a GEOL rubric is documented mathematical ability equivalent to MATH 007 Algebra.
Ability can be demonstrated by appropriate college credit or UM-Western Math Placement Exam score.

GEOL 101 INTRODUCTION TO GEOLOGY (4)
Fundamental concepts of physical geology. Topics include the differentiation of the Earth, origin of the oceans and atmosphere, igneous, metamorphic, and sedimentary processes, earthquakes, plate tectonics, mountain building, surficial processes, glaciation and climate modeling, geologic time, evolution of life, and Earth history. Includes hands-on experience with rocks, minerals, fossils, and maps. Lab fee. Prereq: equivalent of MATH 007 or higher.

GEOL 150 ENVIRONMENTAL GEOLOGY (4)
This course explores the human impact on the Earth and its resources. Topics include population growth, urban development and land-use planning, environmental policy, water pollution, air pollution, acid rain, climate modeling, greenhouse warming, waste disposal, soil erosion, energy resources, geological hazards, and the environmental impact of resource extraction and use. Lab fee. Prereq: equivalent of MATH 007 or higher. (spring)

GEOL 226 ROCKS, MINERALS, & RESOURCES (4)
This course covers the fundamentals of mineralogy followed by a thorough review of the classification and formation of igneous, metamorphic and sedimentary rocks. Emphasis on the tectonic environments of rock and mineral formation, and on rocks and minerals as human resources. Rock and mineral identification will focus on hand-samples. Lab fee. Prereq: GEOL 101 or 150, and CHEM 131, or c/i. (spring/even-numbered years)

GEOL 330 STRUCTURE & TECTONICS (4)
This field-based course covers the deformation of the Earth's crust. Topics include the mechanics of rock deformation (stress and strain), characteristics of megascopic (folds, faults), meso-scopic (foliation, lineation), and microscopic (crystal fabric) structures, and the processes of mountain building at convergent, divergent, and transform-fault plate boundaries. Field map-ping techniques will be taught during afternoon and/or weekend field trips in the Dillon area. Lab fee.Prereq: GEOL 226 and PHYS 233, or c/i. (fall/odd-numbered years)

GEOL 378 SURFICIAL PROCESSES (4)
Field and laboratory based study of Earth-surface processes that shape landscapes. Topics include weathering and soil formation, erosion and transport of particulate and dissolved materials, geomorphic characteristics of deposits expressed as land-forms, and engineering-related physical properties of surficial deposits. Field projects may emphasize use of landforms and/or surface processes to evaluate geologic hazards, geologic resources, or other environmental problems. Lab fee. Prereq: GEOL 101 or 150, and GEOL 226, or c/i. (fall/even-numbered years)

HEALTH & HUMAN PERFORMANCE

HHP 117 SNOWBOARDING (1)
This course is an introduction to the basic skills of snowboarding. Instructional groups will be formed for beginner, intermediate, and advanced snowboarders. Students are expected to demonstrate comprehension of the sport through exams and class participation. Student participation is critical to overall grade. Equipment rental is available at Maverick Mountain. Lab fee varies to cover lift ticket and lesson costs. (spring)

HHP/EQST 222 ELEMENTS OF RODEO (2)
The Elements of Rodeo courses focus on National Intercollegiate Rodeo Association Events: bareback riding, steer wrestling, saddle bronc riding, tie down roping, team roping, goat tying, breakaway roping, and barrel racing. Each semester rules governing a selected event, techniques of competition, and responsibilities of NIRA athletes are presented. Students will apply fitness and wellness concepts, injury prevention measures, basic injury care, and winning physical and mental strategies to human and equine athletes competing in the event.

INDUSTRIAL TECHNOLOGY

IT 220 APPLIED ELECTRICITY & ELECTRONICS (3) and
IT 220L APPLIED ELECTRICITY & ELECTRONICS Lab
This lecture/lab course is an introduction to electricity and solid-state electronics concepts including electrical energy and power, magnetism, direct and alternating current, semiconduc-tors, power supplies, amplifiers, oscillators, and electronic communication. Lab fee. Prereq: IT 120 and MATH 111 or 112. (fall)

LIBRARY SCIENCE

Courses with LIB rubric are offered through The University of Montana-Western, Dillon.
Courses with C&I rubric are offered through The University of Montana-Missoula.

To register for the Library Media Program on the Dillon and Missoula campuses,
go to the following URL: www.umwestern.edu/Academics/library/libk12/grad/admission.htm

LIB 461 INFORMATION LITERACY & CURRICULUM (3)
The course will focus on instructional techniques for teaching literacy skills, information retrieval, research, and lifelong learning. Exploration of how curriculum is designed and how library instruction is integrated into the classroom will be studied. Collaborative planning, methods of library instruction, and its assessment will be examined. Students will develop an integrated unit, participate in class discussions, and create a school research process model. Internet only. (spring/even-numbered years, summer/odd-numbered years)

LIB 464 REFERENCE RESOURCES (3)
This class focuses on the evaluation, selection, and use of basic reference resources. It also contains teaching of media skills, information negotiation, search strategies, database use, and information services.

LIB 469 LIBRARY MEDIA PRACTICUM (3)
C&I 485 LIBRARY MEDIA PRACTICUM (3)
This field-based course is composed of on-the-job experience in a school media center under the supervision of a professionally trained school librarian, and observation and participation in a type of library other than a K-12 setting. The course will focus on the ability to use course content from the 5 library core classes with K-12 students and teachers in a school setting and will compare and contrast the school library with another type of information center. Students will demonstrate their understand-ing of theory through practice. Evaluation will employ state and national standards, journals, logs and mentor reports. Internet and field-based course. Prereq: LIB 461, LIB 464, C&I 480, C&I 483, and C&I 484. (summer)

C&I 480 COLLECTION DEVELOPMENT & CURRICULUM (3)
The course will examine the assessment and development of K-12 library collections with specific attention being placed on factors affecting the collection, tools to assist in building the collection, and policies and procedures leading to the creation of a quality library media collection. Students will demonstrate the assimilation of course content through library literature research, oral presentations, written papers, and examinations of various types of selection tools. Internet only. (fall)

C&I 483 LIBRARY MEDIA TECHNICAL PROCESSES (2)
A presentation of cataloging concepts, standards, basic tools, and automation concerns with particular emphasis on their application in a school library and on developing students' practical skills as catalogers will be studied. The acquisition and technical services functions of a school library media center will also be examined. Students are expected to demonstrate understanding and comprehension of course content through examinations and writing assignments. Internet only. (summer/even-numbered years, spring/odd-numbered years)

C&I 484 ADMINISTRATION & ASSESSMENT OF LIBRARY MEDIA (3)
This course consists of organizing and operating a school media center including internal policy and external relations, concepts of professionalism, commitment, and values of school librarianship. Students will develop basic skills that are involved in the administration and management of a K-12 library media program such as budgeting, methodology needed to plan and implement library programs, integrate curriculum, and update library technology. Students will be assessed through written assignments, formal oral presentations, and informal class discussions. Internet only. (spring)

C&I 488 LIBRARY & TECHNOLOGY (2)
The planning and implementation of various technologies in the automation of library services and the instructional process will be explored. Retrieving and evaluating electronic information and database searching, networking and resources sharing, and telecommunications plus multimedia and the impact of technolo-gy on education will be examined. Students will use course con-tent to plan for the automation of a school library media center and incorporate various technologies in the teaching and learning process. Demonstrations, discussions, and projects will be used for instruction with evaluation consisting of papers, presentations, and the creation of a school technology planning document. Internet only. (summer/even-numbered years)

MATHEMATICS

**The Mathematics Program has been significantly revised effective the 2004-05 Academic Year.
All Mathematics course descriptions are listed below, including those not revised.**

MATH 007 ALGEBRA (4)

(Credit not applicable to graduation; credit may not count as part of load for financial aid purposes; credit may not count as part of load for eligibility purposes.)
In this course numbers, variables, and symbols are studied. Students learn to graph a library of basic functions, their shifts and stretches. An elementary set of operations and solution methods for linear, quadratic, rational, and radical forms and equations is developed. In addition, basic arithmetic operations necessary for the basic algebra described above are reviewed. (fall/spring)

MATH 100 DESCRIPTIVE STATISTICS (1)

This course covers the basics of descriptive statistics. The student will learn how to collect, organize, represent, and interpret data using tables, graphs, charts, and mathematical models. Upon successful completion of the course the student will be familiar with data collection, the concepts of mean, mode, median, standard deviation, counting techniques, and probability distributions. Prereq: MATH 007 grade C or better, or c/i. (fall/spring)

**All mathematics courses beyond this level satisfy
the Mathematics General Education requirement.**

MATH 101 LOGIC (4)

Upon successful completion of this introductory course in logic students will be able to identify various types of arguments and ways of analyzing and evaluating these arguments. Emphasis will be placed upon using the techniques of modern symbolic logic as a means of analyzing and evaluating formal arguments. In using these techniques, students will develop their abilities to analyze and resolve complex deductive problems. Among the topics typically covered are tautologies, fallacies, syllogisms, causal hypotheses, logic diagrams, truth tables, argument analysis, truth-functional reasoning, and applications to logic circuits. Prereq: MATH 007 grade C or better, or c/i.

MATH 102 LINEAR MATHEMATICS (4)

This course is an introductory course in linear algebra. Upon successful completion of this course the student should be familiar with solving systems of linear equations, matrix algebra, linear programming, Markov processes, and Gauss-Jordan elimination. The student will also be introduced to appropriate technology used in solving linear algebra problems. Prereq: MATH 007 grade C or better, or c/i.

MATH 103 GAME THEORY (4)

Game theory studies how individuals make decisions when their actions affect each other. Topics to be covered in this course may include dominance, Nash equilibrium, mixed-strategy Nash equilibrium, the Prisoner's dilemma, oligopolies, auctions, bargaining, cooperative games, and evolutionary game theory. Upon successful completion of this course the student should be able to formulate and analyze game-theoretic models for various economic, political, social, and biological phenomena. Prereq: MATH 007 grade C or better, or c/i.

MATH 105 NUMBER THEORY (4)

In this course the student will study the development and properties of number systems. This includes the study of the real numbers and algorithms that use them. It also includes the study of number sequences and number patterns. Prereq: MATH 007 grade C or better, or c/i. (fall/spring)

MATH 106 GEOMETRY (4)

Upon successful completion of this course the student should be familiar with introductory geometry, geometric constructions, congruence, similarity, measurement, coordinate geometry, and an introduction to computer geometry. The student should exhibit competence in using congruence and similarity to solve geometric problems, completing geometric constructions and introductory proofs, using computer software to investigate, simulate, and solve spatial problems, and the ability to communicate using mathematical terminology. Prereq: MATH 007 grade C or better, or c/i. (fall/spring)

MATH 107 MORPHOMETRICS (4)

Morphometrics is the mathematical study of shape. This course will investigate how shapes from the natural world are represented mathematically. Upon successful completion of this course the student should be able to use algebraic functions to model form, use spline techniques to establish deformation grids between forms, use fractal geometry to model self-similar forms, and describe the shape of the universe. The student will be introduced to appropriate technology used in modeling shape. Prereq: MATH 007 grade C or better, or c/i. (spring/even-numbered years)

MATH 108 GRAPH THEORY (4)

Upon successful completion of this course the student should be familiar with the basic concept of graphs and how graphs are used to solve problems. Topics will include Hamiltonian and Euler paths, networks, directed graphs and critical paths, coloring problems and Ramsey numbers, tournaments, and graphical enumeration. The student should exhibit competence in applying the algorithms used to solve problems involving these graph theory topics. Prereq: MATH 007 grade C or better, or c/i.

MATH 111 COLLEGE ALGEBRA (4)

In this course the library of functions, their shifts and stretches, is expanded to include third or higher order polynomials, a comprehensive look at rational expressions, exponential and logarithmic equations, and the relations called conic sections. Domain, range, composition, and inverse concepts and calculations are presented. More comprehensive operations and solution methods are developed for linear, quadratic, rational, and radical forms. Operations and solution methods for exponential and logarithmic forms are introduced. Prereq: MATH 007 grade C or better, or c/i. (spring)

MATH 112 TRIGONOMETRY & COMPLEX NUMBERS (4)

The emphasis of this course is a broad study of trigonometric functions. Triangular trigonometry; complex variables; polar, cylindrical and spherical coordinates; and other applications of trigonometry are also introduced. Prereq: MATH 007 grade C or better, or c/i. (fall)

MATH 131 PROBABILITY (4)

This course is designed as an introductory course to probability. Upon successful completion of this course the student should be familiar with basic set theory concepts, combinations and permutation problems, probability distributions, and basic probability computations. The student will also be introduced to calculator or computer technology used in simulating and calculating probabilities. Prereq: MATH 007 grade C or better, or c/i. (fall/spring)

MATH 201 CALCULUS I (4)

This is the first course in a three-semester calculus sequence. This course will provide the student with an introduction to differential and integral calculus. The student will investigate functions in one variable geometrically, numerically, and algebraically. Topics are introduced by the investigation of practical problems and include limits, continuity, derivatives, antiderivatives, and the Fundamental Theorem of Calculus. Prereq: MATH 111 and 112 grade C or better, or c/i. (fall)

MATH 202 CALCULUS II (4)

This is the second course in a three-semester calculus sequence. This course will provide the student with a more comprehensive knowledge of differential and integral calculus. As a continua-tion of MATH 201, the student will investigate practical problems geometrically, numerically, and algebraically. Several different integration techniques will be introduced and applied. The student will also encounter elementary differential equations through applications, as well as continue the study of limits and convergence via improper integrals and Taylor series. Prereq: MATH 201 grade C or better, or c/i. (fall/odd-numbered years)

MATH 203 CALCULUS III (4)

This third course in the calculus sequence emphasizes multivariate calculus. Upon successful completion of this course the student should be familiar with polar, spherical, and cylindrical coordinates; parametric curves; vectors in the plane and space; differentiation and integration of functions of several variables; and applications. The student should exhibit competence in using differentiation and integration to solve problems of motion and force and in implementing different coordinate systems. The student will demonstrate the ability to reason, visualize in space, implement appropriate technologies, and communicate using mathematical terminology. Prereq: MATH 202 and 260 grade C or better, or c/i. (spring/odd-numbered years)

MATH 219 DIRECTED STUDY (V 1-4)

Selected topics under faculty supervision. Prereq: c/i and c/vc. (on demand)

MATH 232 STATISTICS (4)

Upon completion of this course the student should be familiar with the basic concepts of descriptive and inferential statistics. The student should exhibit competence in describing data using measures of central tendency, measures of location, measures of dispersion, and various graphical techniques. The student should be able to compute confidence intervals and test hypotheses regarding population parameters. The student will also be familiar with analyzing data using calculators and computer software. Prereq: MATH 131 grade C or better, or c/i. (fall/spring)

MATH 260 LINEAR ALGEBRA (4)

Upon successful completion of this course the student should be familiar with the vocabulary and notation of matrix and vector algebra and should exhibit competence in computing (algebraically and with the aid of computer software) solutions to systems of linear equations, determinants, eigenvalues, and eigenvectors. The student should also become acquainted with linear transformations, abstract vector spaces, and matrix factorizations. Topics will be motivated and will culminate with relative applications. Prereq: MATH 201 grade C or better, or c/i. (fall/even-numbered years)

MATH 290 INDEPENDENT STUDY (V 1-4)

Directed research or study on an individual basis. Prereq: c/i, and c/vc. (on demand)

MATH 341 COLLEGE GEOMETRY (4)

Upon successful completion of this course the student should be familiar with deductive and inductive reasoning and with the axioms and theorems of Euclidean and non-Euclidean geometries. The student should exhibit competence in performing geometric constructions both by hand and with the aid of computer software, in proving geometric theorems in both Euclidean and non-Euclidean geometries, and in solving a variety of problems based upon the geometric properties studied. Prereq: MATH 007 grade C or better, or c/i. (fall)

MATH 342 HISTORY OF MATHEMATICS (4)

Upon successful completion of this course the student should be familiar with both ancient and modern numeration systems, with the contributions to mathematics by famous mathematicians, and with the chronological order of significant events in mathematics. The student should also exhibit competence in solving selected problems using appropriate historical mathematical methods. Prereq: MATH 341 grade C or better, or c/i. (fall/even-numbered years)

MATH 343 FOUNDATIONS OF MATHEMATICS (4)

Upon successful completion of this course the student should be familiar with techniques of writing mathematical proofs using direct, contrapositive, contradiction, and induction methods. In addition, the student will be introduced to some fundamental ideas used throughout mathematics including logic, set theory, number theory, complex numbers, function theory, and group theory. Prereq: MATH 341 grade C or better, or c/i. (fall)

MATH 351 METHODS & MATERIALS IN MATHEMATICS (4)

Upon successful completion of this course the student should be familiar with current trends in the methods and materials used for effective teaching of mathematics. The student should exhibit competence in developing unit and lesson plans, expository and inquiry-based instruction, forms of professional development, theories of instruction, the appropriate use of technologies in instruction, skills in effective communication with students and peers on mathematical and professional educator topics. Professional Education field experience required (see Professional Education section of this Catalog). Prereq: TEP and MATH 341 grade C or better, or c/i. (spring)

MATH 401 DETERMINISTIC MODELING (4)

An introduction to discrete and continuous time models that arise from the study of ecological populations. Difference equation, matrix equation, and ordinary differential equation models for populations will be formulated and analyzed both analytically and numerically. Prereq: MATH 201 grade C or better, or c/i. (spring/even-numbered years)

MATH 419 DIRECTED STUDY (V 1-4)

Selected topics under faculty supervision. Prereq: c/i and c/vc. (on demand)

MATH 433 STOCHASTIC MODELING (4)

This is a course in stochastic processes with emphasis on model building and probabilistic reasoning. Topics to be covered may include a review of elementary probability theory, Poisson processes, discrete and continuous time Markov chains, Brownian motion, random walks, and martingales. Applications will be drawn from the physical, biological, and social sciences. Students will learn hands-on design and construction of working models using appropriate technology. Upon successful completion of this course the student should be proficient in asking research questions, collecting and arranging data, and designing models to answer the questions asked. Prereq: MATH 131 grade C or better, or c/i. (spring/odd-numbered years)

MATH 441 ADVANCED CALCULUS (4)

An introduction to the fundamental concepts in calculus such as limits, continuity, differentiability, convergence, sequences, series, and integrability. Prereq: MATH 203 and 341 grade C or better, or c/i. (spring)

MATH 442 COMPLEX VARIABLES (4)

An introduction to topics in complex variables such as functions, limits, derivatives, integrals, the Cauchy-Riemann conditions, series representation of functions, the Cauchy Integral formula, and elementary conformal mappings. Prereq: MATH 203 and 341 grade C or better, or c/i.

MATH 443 ABSTRACT ALGEBRA (4)

An introduction to the fundamental algebraic structures such as groups, rings, and fields. Prereq: MATH 343 grade C or better, or c/i. (fall)

MATH 444 ADVANCED NUMBER THEORY (4)

An introduction to the principle ideas of number theory such as divisibility, congruencies, linear Diophantine equations, Fermat's Theorem, Euler's Theorem, Pythagorean Triples, and the distribution of primes. Prereq: MATH 343 grade C or better, or c/i.

MATH 490 INDEPENDENT STUDY (V 1-4)

Directed research or study on an individual basis. Prereq: c/i and c/vc. (on demand)

MATH 498 SENIOR PROJECT/THESIS (V 4-12) R

This is intended as a culminating course for students who wish to incorporate an individually pursued thesis topic within their academic education. The student will complete an appropriate thesis in conjunction with her/his advisor. Assessment will be based on both a written document and oral presentation upon completion of the thesis. Prereq: Senior standing and c/i. (fall/spring)

PHYSICS

A prerequisite for any course with a PHYS rubric is documented mathematical ability equivalent to MATH 007 Algebra. Ability can be demonstrated by appropriate college credit or UM-Western Math Placement Exam score.

PHYS 101 INTRODUCTION TO PHYSICS (4)

Elementary principles of mechanics, thermodynamics, electricity, and magnetism, with application to chemistry, earth, and life sciences. Lab included. Lab fee. Prereq: equivalent of MATH 007 or higher.

PHYS 233 GENERAL PHYSICS (4)

A calculus-based introduction to classical mechanics, including fluid and wave mechanics. Lab included. Lab fee. Prereq: Concurrent enrollment in MATH 201. (fall)

PHYS 234 GENERAL PHYSICS (4)

Electricity and magnetism. Lab included. Lab fee. Prereq: Concurrent enrollment in MATH 202. (spring)

PHYS 239 PHYSICAL METEOROLOGY (3)

An application of the laws of mechanics and thermodynamics to the Earth's atmosphere. Weather, air pollution, and climate are covered. Prereq: equivalent of MATH 007 or higher. (fall/odd-numbered years)

PHYS 240 ASTRONOMY (3)

An introductory course including the solar system, stellar structure, galaxies, and cosmology. Prereq: equivalent of MATH 007 or higher. (spring/even-numbered years)