**2013-14 BS Biological Sciences**

**Cell and Molecular Concentration**

120 Credit minimum *designates only grades of “C” or better (not ‘C-’) may be used to fulfill these requirements

**GENERAL REQUIREMENTS**

*COMMUNICATIONS:* (9)
ENGL 111X Intro to Academic Writing (3)  
ENGL 211X Academic Writing -Literature  
OR ENGL 213X Academic Writing - Social & Nat. Sci.(3)  
COMM 131X Group Communications OR 141X Public Speaking (3)

* PERSPECTIVES ON THE HUMAN CONDITION:*-(18-22)
Complete 6 courses listed OR 4 of those listed plus 2 semester length courses in a single AK Native or other non-English language or 3 semester length courses (9 credits) in American Sign Language. All Perspectives Core requirements require English 111 placement; 200 level courses- sophomore standing or higher; 300 level - junior standing or higher

- ANTH 100X/SOC 100X Individual, Society & Culture (3)  
- ECON/PS 100X World Political Economy (3)  
- HIST 100X World History (3)  
- ART/MUS/THR 200X or HUM 201X or ANS 202X Art Appreciation (3)  
- ENGL/LF 200X World Literature (3)  
- BA 323X or COMM 300X or Just 300X or RNM 303X or PHIL 322X or PS 300X (these are all 300 level Ethics courses) (3)

Language option as listed above- but may not be counted under minor requirements:

________________ ( )__ ___________ ( )__ ______________________ ( )__

* MATHEMATICS & STATISTICS:*- (6-7)
Requires recent Math Placement and/or prereqs
* Statistics 200X Elementary Probability & Statistics (3)  
* Stats 300 Statistics (3)  
* Math 272X Calculus for Life Sciences (3)  
* Math 200X Calculus (4)  

*NATURAL SCIENCE:*- (16)
CHEM 105 is a pre/co-req for BIOL 115 -both require MATH 107 & ENGL 111 or higher placement. You MUST have passed CHEM 105 (C or higher) prior to taking BIOL 115 or be concurrently enrolled – for concurrent enrollment, if you drop CHEM 105 during the semester, the BIOL 115 faculty may also drop you from their course as well.

CHEM 105 General Chemistry I (4)  
and CHEM 106 General Chemistry II (4)  
PHYS 103 College Physics I, Fall, DEV 105 & ENGL 111 placement (4)  
and *PHYS 104 College Physics II - Spring (4)

**LIBRARY & INFO SKILLS:**-(0-1)
LS competency test OR LS 100X or 101X (1)

**WRITING AND ORAL INTENSIVE COURSES:**
Required: 2 DESIGNATED (W); AND  
1 DESIGNATED (O) COURSE OR 2 DESIGNATED (O/2):

____________________ (W) ___________ (W)  
____________________ (O) OR __________________ (O/2) ___________ (O/2)

**UPPER DIVISION CREDITS** (300 & 400-level): (39)
Transfer Credits  minimum of 24 UAF Credits

**MAJOR REQUIREMENTS** (All BIOL courses except BIOL 213/214 listed below have BIOL 115/116 prereqs as well as at least Math 107/ENGL 111 placement prereqs)

1. Complete the following:
   * BIOL 115 Fundamentals of Biology I – Fall/Summer, Math 107 & ENGL 111 placement, CHEM 105 or concurrent enrollment (4) 
   * BIOL 116 Fundamentals of Bio II – Spring/Summer, BIOL 115X (4) 
   * BIOL 260/362 Principles of Genetics, CHEM 105, Math 107 (4)  
   * BIOL 481 Principles of Evolution, BIOL 260/362; STAT 200 prerequisite (or concurrent enrollment in STAT 200), junior standing or higher, stacked w/ BIOL 681, (4)

   * BIOL 310 Animal Physiology, Fall, CHEM 105/106 prerequisite (4) 
   OR *BIOL 334 Structure and Function in Vascular Plants, odd Spring, MATH 107, ENGL 111 & 211/213 prerequisites \( ^W \) (4)  
   OR *BIOL 342 Microbiology, Spring, CHEM 105 prerequisite (4)
   OR * BIOL 213/111 Human Anatomy & Physiology I, Fall, Placement in DEV 105 and ENGL 111X or higher prerequisites \( ^W \); CHEM 103X or CHEM 105X (4) and  
   * BIOL 214/112 Human Anatomy & Physiology II, Spring, BIOL 213X/111X CHEM 103X or 105X prerequisite (4)

   * CHEM 321 Organic Chem I, Fall, CHEM 106 prerequisite \( ^W \) (4)
   * CHEM 322 Organic Chem II, Spring, CHEM 321 prerequisite \( ^W \) (3)

2. Complete the following concentration requirements (at least one must meet W requirement) Lists on reverse:
   * BIOL 360/261 Cell & Molecular, BIOL 260/362, CHEM 105 & 106 (3)  
   * CHEM 450 General Biochemistry – Macromolecules, Fall, CHEM 322 prerequisite \( ^W \) (3)
   * CHEM 451 General Biochemistry – Metabolism, Spring, CHEM 321 prerequisite \( ^W \) (3)
   * Cell & molecular or physiology electives - take three additional courses from Lists A or B, at least one of which must be from List A.  
   * Biology breadth elective – take one addition from Lists C or D

3. Complete a biology capstone project (0-4) Can be met through petition
   following the completion of a mentored research project w/a faculty member (e.g. by taking BIOL 497 or BIOL 490 or without course credits), or automatically by completing at least one of the following courses:

   * BIOL 434/334 Structure and Function in Vascular Plants, odd Spring, MATH 107, ENGL 111 & 211/213 prerequisites \( ^W \) (4)  
   * BIOL 472 Community Ecology, Fall even years, BIOL 271/371, ENGL 111 & 211/213 prerequisites \( ^W \) (3)
   * BIOL 441 Animal Behavior, Fall, BIOL 271/371, BIOL 310, COMM 131/141, ENGL 111 & 211/213 prerequisites, BIOL 481 co-requisite \( ^W \) (W, O/2) (4)  
   * BIOL 473 Limnology, Fall, BIOL 271/371, CHEM 105 & 106, ENGL 111 & 211/213 prerequisites \( ^W \) (3)
   * BIOL 403 Metabolism & Biochemistry, Fall, CHEM 105 & 106, BIOL 261/360, COMM 131/141, ENGL 111 & 211/213 prerequisites \( ^W \) (4)

\( ^W \) or permission of instructor

**ELECTIVES** (for a program total of 120 credits):

________________ ( ) ___________ ( )  
________________ ( ) ___________ ( )  
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**a minor is optional with a BS degree – see current catalog for more details and requirements. If a minor is selected, there will be fewer free electives required.**
2013-14 BA & BS Biological Sciences Degree Programs

List A-D Supplement – all require grade of ‘C’ or higher*

See current catalog for prereqs and when offered

*List A – Cell and Molecular Biology
- BIOL 342 Microbiology (3)
- BIOL 360/261 Cell and Molecular Biology (3)
- BIOL 403 Metabolism and Biochemistry (W) (4)
- BIOL 417 Neurobiology (O) (3)
- BIOL 462 Concepts of Infectious Disease (O) (3)
- BIOL 465 Immunology (3)
- BIOL 4xx Principles of Virology (3)
- CHEM 322 Organic Chemistry II (3)
- CHEM 450 General Biochemistry– Macromolecules (3)
- CHEM 451 General Biochemistry – Metabolism (3)
- CHEM 470 Cellular and Molecular Neuroscience (3)
- CHEM 474 Neurochemistry (3)

*List B – Physiology
- BIOL 310 Animal Physiology, Fall, CHEM 105/106 prereq (4)
- BIOL 335 Epidemiology (3)
- BIOL 342 Microbiology (4)
- BIOL 417 Neurobiology (O) (3)
- BIOL 422 Physiology and Ecology of Overwintering (3)
- BIOL 434/334 Structure & Function in Vascular Plants, (W)(4)
- BIOL 441 Animal Behavior, (W, O/2) (3)
- BIOL 445 Environmental Toxicology (W, O) (3)
- BIOL 457 Environmental Microbiology (W) (3)
- BIOL 458 Vertebrate Endocrinology (3)
- BIOL 459 Wildlife Nutrition (O/2) (4)
- BIOL 462 Concepts of Infectious Disease (O) (3)
- BIOL 465 Immunology (3)
- BIOL 4xx Principles of Virology (3)

*List C – Ecology and Evolutionary Biology
- BIOL 371/271 Principles of Ecology (4)
- BIOL 418 Biogeography (3)
- BIOL 422 Physiology and Ecology of Overwintering (3)
- BIOL 433 Conservation Genetics (3)
- BIOL 441 Animal Behavior, (W, O/2) (3)
- BIOL 457 Environmental Microbiology (W) (3)
- BIOL 462 Concepts of Infectious Disease (O) (3)
- BIOL 469 Landscape Ecology and Wildlife Habitat (O) (3)
- BIOL 471 Population Ecology (3)
- BIOL 472 Community Ecology (W) (3)
- BIOL 473 Limnology (W) (3)
- BIOL 474 Plant Ecology (4)
- BIOL 475 Vegetation Description and Analysis (3)
- BIOL 476 Ecosystem Ecology (O) (3)
- BIOL 483 Stream Ecology (3)
- BIOL 485 Global Change Ecology (3)
- BIOL 486 Vertebrate Paleontology (3)
- BIOL 487 Conceptual issues in Evolutionary Biology (3)
- BIOL 488 Arctic Vegetation Ecology: Geobotany (3)
- WLF 301 Design of Wildlife Studies (3)
- WLF 410 Wildlife Populations and Their Management (3)

*List D - Organismal
- BIOL 301 Biology of Fishes (4)
- BIOL 305 Invertebrate Zoology (4)
- BIOL 317 Comparative Anatomy (4)
- BIOL 331 Systematic Botany (4)
- BIOL 406 Entomology (4)
- BIOL 418 Biogeography (4)
- BIOL 425 Mammalogy (W) (3)
- BIOL 426 Ornithology (W,O/2) (3)
- BIOL 427 Ichthyology (4)
- BIOL 486 Vertebrate Paleontology (3)
- BIOL 489 Vegetation Description and Analysis (3)

Once the student decides on a concentration, the student should send an email to registrar@uaf.edu with the student’s name, ID number, and choice of concentration. This will assist w/correct tracking in DegreeWorks.