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| **COURSE CHECKLIST FOR Animal Science Major, BIOTECHNOLOGY SUBPLAN** | | |
| **Students must complete a minimum of 120 credits (150 for double degree) and have a minimum 2.0 cumulative GPA and a minimum 2.0 major GPA to fulfill university graduation requirements** | | |
| **University Gen Ed Requirements** | | |
|  | College Writing - Fall or Spring | ENGLWRIT 112 (or test waiver) |
|  | Arts/Literature - AL or AT | 4 credit course |
|  | Historical Studies - HS | 4 credit course |
|  | Social/Behavioral Sciences - SB | 4 credit course |
|  | Plus one additional course in – AL, AT, HS, SB, SI or I | ANIMLSCI 260 fulfills SI |
|  | Diversity "DU" - can be combined with Gen Eds above, i.e. HSDU | Either DU or DG should be taken in first year |
|  | Diversity "DG" - can be combined with Gen Eds above, i.e. SBDG |
|  | First Year Seminar, 1 credit (not enforced in SPIRE) | Can be fulfilled by Animal Science Residential Academic Program-RAP |
|  | Integrative Experience - IE, must be taken in VASCI department at UMass, for alternatives, refer to telfer@umass.edu  Good Intentions  Problem-Based Learning in Advanced Animal Health (Prereq ANIMLSCI 103, 200, 220, 311, and 472 or 572) cap 10  Honors Thesis+ Integrating Learning and Research (must complete all three) | ANIMLSCI 494GI or ANIMLSCI 494PI (fall) or  ANIMLSCI 499Y+499T+ ANIMLSCI 494TI |
| **Basic Science & Math Requirements** | | |
|  | Intro Biology I | BIOLOGY 151 |
|  | Intro Biology II - prereq. minimum C in BIOLOGY 151 | BIOLOGY 152 |
|  | Biology lab | BIOLOGY 153 |
|  | General Chemistry I + lab - prereq. minimum 20 in part A of math placement exam, or Math 101/102, or Math 104 | CHEM 111 |
|  | General Chemistry II + lab - prereq. minimum C- in CHEM 111 | CHEM 112 |
|  | Organic Chemistry - prereq. CHEM 112 minimum C- | CHEM 261 or 250 |
|  | Biochemistry - prereq. CHEM 250 or 261 or 265, minimum C- | BIOCHEM 420 |
|  | Math R1 either MATH 101/102 or MATH 104 or Test-out |  |
|  | Statistics (Math R2 requirement) | STATISTC 111 or STATISTC 240 or RESECON 212 |
|  | Microbiology - prereq. CHEM 261 or CHEM 250 or current enrollment | MICROBIO 310 |
| **Animal Science Core** | | |
|  | Introduction to Animal Science with lab – (Fall) note: external or internal transfer students can substitute higher-level elective | ANIMLSCI 101 (lab) |
|  | Introduction to Animal Management with lab – (Spring) - prereq. ANIMLSCI 101 minimum C | ANIMLSCI 103 (lab) |
|  | Cellular and Molecular Biology – (Spring) - prereq. BIOLOGY 151 or 161H with a grade of C or better and CHEM 111 or 121H with a grade of C- or better. | ANIMLSCI 285 or BIOLOGY 285 or BIOCHEM 285 |
|  | Anatomy/Physiology with lab– (Fall) - prereq. BIOLOGY 151 or BIOLOGY 161H, minimum C | ANIMLSCI 220 (lab) |
|  | Animal Care & Welfare with discussion – (Fall) Gen Ed SI | ANIMLSCI 260 (discussion) |
|  | Careers in Animal Science - Spring | ANIMLSCI 392A |
|  | Genetics – (Fall) - Prereqs: BIOLOGY 151 or 161H with a grade of C or better AND BIOLOGY 152 or 162H with a grade of C or better | ANIMLSCI 311 or BIOLOGY 311 or BIOCHEM 311 |
|  | Animal Nutrition & Feeding with lab– (4 credits, Spring) OR Equine, Cattle and Companion Animal Nutrition (3 credits, Fall) - prereq. ANSCI 220 | ANIMLSCI 332 (lab) or  ANIMLSCI 333    ANIMLSCI 33 |
|  | Junior Year Writing - Fall or Spring | NATSCI 387 |
|  | Infection and Immunity – (Fall) OR Molecular Immunology – (Spring) prereq. ANSCI 285 or BIOLOGY 285 or BIOCHEM 285 | ANIMLSCI 472 or  ANIMLSCI 572 |
|  | Reproduction – Wildlife Reproduction (3 credits, Spring) OR Physiology of Reproduction with lab (4 credits, Spring) pre-req. ANSCI 220 | ANIMLSCI 421 or  ANIMLSCI 521 (lab) |
|  | **Biotechnology Subplan Requirements** | **See reverse** |

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|  | **Biotechnology Subplan Requirements** |  |
|  | Fundamentals in Veterinary and Biotechnology Laboratory Techniques – (Fall) 3 credits, prereq. Biology 151 and Chemistry 111 with a grade of C or better | ANIMLSCI 365 (lab) |
|  | Veterinary Microbiology Lab – (Fall) (Spring) 2 credits,  prereqs. Biology 152 & 153 with a grade of C or better, MICROBIO 310 or concurrent enrollment. | ANIMLSCI 366 (lab) |
|  | Research Animal Management I with lab – (Fall) 4 credits | ANIMLSCI 455 (lab) |
|  | Research Animal Management II with lab – (Spring)  3 credits prereq. ANIMLSCI 455 | ANIMLSCI 456 (lab) |
|  | **Complete 6 credits in Laboratory Research from the following:**  Veterinary Oncology (2 credits), prereq ANIMLSCI 103 or   ANIMLSCI 115 and BIOLOGY 151  Fundamentals of Vertebrate Embryology (3 credits) prereq   BIOLOGY 151 & 152 and ANIMLSCI 285, BIOCHEM   285 or BIOLOGY 285, all with a grade of C or better.  Biotech Research – Cellular and Molecular I (1 credit)  Biotech Research – Cellular and Molecular II (2 credits)  Biotech Research – Cellular and Molecular III (3 credits)  Biotech Research – AnimaI Models I (1 credit)  Biotech Research – AnimaI Models II (2 credits) Biotech Research – AnimaI Models III (3 credits) | ANIMLSCI 386 (lab)  ANIMLSCI 390E (lab)  ANIMLSCI 291C  ANIMLSCI 391C  ANIMLSCI 491C  ANIMLSCI 291M  ANIMLSCI 391M  ANIMLSCI 491M |

4/23/21