

A QUICK GUIDE TO COURSE REQUIREMENTS FOR BIOLOGY CONCENTRATIONS (updated 4-6-22)

REQUIRED ANCILLARY COURSES

- CHEM 131/131L (4) AND CHEM 132/132L (4)
- CHEM 330 (5) OR CHEM 331+332 (5,5)
- PHYS 211+212 (4,4) OR PHYS 241+242 (4,4)
- MATH 211 (3) OR MATH 273 (4) OR MATH 237 (4) OR PSYC 212 (4)

REQUIRED FOUNDATION COURSES

- BIOL 200/200L (4) OR BIOL 203 (4)
- BIOL 206/L (4)
- BIOL 204 (1)
- BIOL 309 (4)

REQUIRED BREADTH COURSES

- BIOL 208 (3) OR BIOL 205+207 (4,4)
- BIOL 408 (4) OR BIOL 409 (4) OR BIOL 405 (4)
- BIOL 342 + BIOL 343 (4,4)
- OR BIOL 325 (4) OR BIOL 436 (3)

BIOLOGY CONCENTRATIONS: (Select one of the following – also see next page)

CELLULAR/MOLECULAR BIOLOGY	FUNCTIONAL BIOLOGY OF ANIMALS	ECOLOGY, EVOLUTION, AND CONSERVATION	SECONDARY EDUCATION
<p><u>Breadth course notes:</u> - Take both BIOL 408 and BIOL 409 Recommended to take 408 first</p> <p><u>Ancillary course notes:</u> MATH 211 or 273 <i>recommended</i></p> <p><u>ALSO TAKE ONE</u> of: BIOL 410-Molec Biology lab (3) BIOL 412-Cell Biology lab (3) BIOL 474-Molec Tech in EEC (3) BIOL 475-Genetics lab (3) CHEM 356-Biochem lab (2)</p> <p><u>and TWO</u> of: BIOL 318-Microbiology (4) BIOL 355-Parasitology (3) BIOL 360-Histology (4) BIOL 411-Cancer biology (3) BIOL 415-Biotechnology (3) BIOL 419-Environmental Microbio (3) BIOL 420-Microbio Infectious Disease (3) BIOL 421-Immunology (4) BIOL 428-Virology (3) BIOL 463-Developmental biology (3) CHEM 351-Biochemistry (3) MBBB 301-Bioinformatics (4) MBBB 315-Genomics (3) (or have transfer credit for an <u>upper level</u> course in Medical Microbiology)</p> <p><u>PLUS:</u> 1) Complete <u>ONE</u> 3-4 credit 300-400 level course that is required or an option for <u>any</u> biology concentration (can include BIOL 405 or a CHEM or MBBB course)</p> <p><u>OR</u> 2) complete BIOL 342 and 343</p> <p><u>OR</u> 3) complete BIOL 491 or 499</p>	<p>Cannot take BIOL436 for breadth req.</p> <p>MATH 211 or 273 <i>strongly recommended</i> (required by most graduate and some med/dental/vet schools)</p> <p><u>MUST TAKE</u> BIOL470-Adv Physio (4)</p> <p><u>ALSO TAKE:</u> <u>ONE</u> of following if taking BIOL 342/343 <u>TWO</u> if taking BIOL 325:</p> <p>BIOL 318-Microbiology (4) BIOL 355-Parasitology (3) BIOL 360-Histology (4) BIOL 367-Endocrinology (3) BIOL 411-Cancer Biology (3) BIOL 420- Microbio Infectious Diseases (3) BIOL 421-Immunology (4) BIOL 427-Neuromuscular Mechanism (2) BIOL 428-Virology (3) BIOL 463-Developmental Bio (3) CHEM 351-Biochemistry (3)</p> <p>(or have transfer credit for an <u>upper level</u> course in Medical Microbiology)</p> <p><u>PLUS:</u> 1) Complete 4+ credits of 300-400 level coursework that is required or optional for <u>any</u> concentration in biology (can include BIOL 405, 408, or 409 if course is not being used to fulfill the breadth requirement)</p> <p><u>OR</u> 2) complete BIOL 491 or 499</p>	<p><u>MUST TAKE:</u> MATH 237 or PSYC 212 Recommended: BIOL 205+207 and 405 BIOL 484 <i>strongly recommended</i></p> <p><u>ALSO TAKE ONE OF:</u> BIOL 310-Conservation Bio (4) BIOL 402-General Ecology (4) BIOL 406-Limnology (4) BIOL 435-Plant Ecology (4)</p> <p><u>AND ONE</u> of: BIOL 304-Ntrl Hstr-Publ EnvEd(3)w/consent BIOL 331-Plant Morphology (4) BIOL 334-Humans, Science Chesapeake (3) BIOL 347-Marine Biology (3) BIOL 353-Invert Zoology (4) BIOL 355-Parasitology (3) BIOL 371-Anim Behavior (4) BIOL 413-Evolution (3) BIOL 432-Vascular Plant Taxonomy (4) BIOL 439-Plant Anatomy (4) BIOL 444-Wildlife Management (4) BIOL 446-Tropical Ecol and Consv (3) BIOL 447-Tropical Field Ecology (4) BIOL 452-Wetlands Ecology (4) BIOL 455-Fish Biology (4) BIOL 456-Ornithology (4) BIOL 458-Mammalogy (4) BIOL 461-Entomology (4) BIOL 467-Herpetology (4) BIOL 472-Org. Form and Function Lab (3) BIOL473-Ecological Field Methods (3) BIOL 474-Molec Tech in Eco,Evo,&Cons(3) BIOL 491-Ind Study (3) or 499-Thesis (3) GEOG 221-Geospatial Technology (3) PHYS 212/242- Physics II (4)</p> <p><u>PLUS:</u> <u>TWO</u> additional courses from the lists above. <u>*If taking BIOL208 take THREE.</u></p>	<p>(students in the <i>UTeach</i> program see reverse side)</p> <p><u>When completing requirements for the biology degree:</u> Must take BIOL205+207 (not 208) Must take BIOL 408 or 409 (not 405) Taking BIOL 325 and CHEM 330 is recommended over the other options Need only one semester of Physics (PHYS 211 or 241) One biology elective from one of the other concentrations and approved by advisor.</p> <p>Not required to take any additional courses in biology beyond the ancillary, foundation and breadth courses, but can do so, especially to increase the ability to teach in certain subdisciplines.</p> <p>Must take SCIE 380.</p> <p><u>Also need one of the following:</u> GEOL 121-PHYS Geology (4) GEOL 123-Hist Geology (4) ASTR 161-Gen Astronomy (4) GEOL 357-Phys Oceanography (3) GEOG 373-Climatology (4) GEOG 377-Descrip Meteorology (4)</p> <p>Students must also complete requirements for teaching certification (details in Undergraduate Catalog)</p>

RECOMMENDATIONS FOR MEDICAL SCHOOL	RECOMMENDATIONS FOR VETERINARY SCHOOL	RECOMMENDATIONS FOR PHYSICIAN ASSISTANT	GUIDELINES FOR <i>UTEACH</i>
<p>Choose the <i>Functional Biology of Animals (FBA)</i> concentration if you enjoy and do well in anatomy and physiology</p> <p>OR</p> <p>Choose <i>Cell & Molecular Biology (CMB)</i> if you enjoy that aspect of biology more.</p> <p>Then do the following:</p> <p>Take BIOL 408 if FBA. If CMB take BIOL 408 first. Take CHEM 331+332-Organic I + II)</p> <p>Take CHEM 351-Biochemistry as one of your “elective” courses</p> <p>Take MATH 237-Biostatistics or PSYC 212-Behavioral Statistics*</p> <p>Other helpful elective courses: BIOL 409(if FBA) and BIOL 470(if CMB)</p> <p>Also consider BIOL 318-Microbio, 360-Hist 367-Endo, 411-Cancer, 420 Micro of Inf Disease, 428-Virology</p> <p>A calculus course (MATH 211 or 273/283) is only required by a few med schools and is not on the MCAT. Check specific requirements of schools of interest.</p> <p>Following not required for the biology degree but <i>strongly</i> recommended for preparation for the MCAT:</p> <ul style="list-style-type: none"> • SOCI 101-Introduction to Sociology • PSYC 101-Introduction to Psychology <p>For Core 9, take one of the following:</p> <ul style="list-style-type: none"> • ENGL 310-Writing Argument • ENGL 313-The Academic Essay • ENGL 316-Writing about Literature • ENGL 317-Writing for Business/Industry • ENGL 318-Technical/Scientific Writing <p>*PSYC 212 does not count for CORE 3, you will need an additional math course.</p>	<p>Choose <i>Functional Biology of Animals</i> concentration and do following:</p> <p>If GPA stays ≥ 3.0, only BIOL 207 is required (and not 205 or 208)</p> <p>Take BIOL 325 (instead of BIOL342+343)</p> <p>Take BIOL 318 as one elective course</p> <p>Take BIOL 408 rather than 405 or 409</p> <p>Take CHEM 331 + 332</p> <p>The following courses are not necessarily required for the biology degree but are required by most veterinary schools:</p> <p>MATH 237 or PSYC 212-Statistics MATH 211 or MATH 273-Calculus CHEM 351-Biochemistry*</p> <p>*Can be your “free elective course”</p> <p>800-1600+ Experience Hours working with animals.</p> <p>For Core 9, taking a ENGL course strongly recommended. Options:</p> <ul style="list-style-type: none"> • ENGL 310-Writing Argument • ENGL 313-The Academic Essay • ENGL 316-Writing About Literature • ENGL 317-Writing for Business/Indust • ENGL 318- Tech/Scientific Writing <p>Most vet schools require a course in Animal Nutrition. This course can be taken online from another university. It <u>may</u> transfer to TU and count as one of the required elective courses. Discuss this in advance with the pre-vet advisor.</p>	<p>Appropriate concentration: FBA is recommended, but CMB is also appropriate as long as you complete:</p> <ul style="list-style-type: none"> • BIOL 342 + BIOL 343 • MATH 237-Statistics (preferred) • BIOL 318-Microbiology* • CHEM 351-Biochemistry <p>Most PA schools require only one semester of Organic chem so can take CHEM 330 and then CHEM 351</p> <p>Following required or <i>strongly</i> recommended by most PA Schools:</p> <ul style="list-style-type: none"> • PSYC 101-Introduction to psychology • PSYC 203-Human Development • BIOL 210-Medical terminology <p>For Core 9, the following advanced writing course are recommended:</p> <ul style="list-style-type: none"> • BIOL 381-Writing for BioSciences • ENGL 310-Writing Argument • ENGL 313-The Academic Essay • ENGL 318- Tech/Scientific Writing <p>Healthcare Experience: Must acquire 500-1500 patient contact/healthcare experience hours (see advisor for details on best types of experiences). Total hours required varies among PA schools.</p> <p>Caution: Different PA schools have different course requirements. Identify at least five schools to which you might apply and investigate requirements ASAP. Adjust coursework accordingly.</p> <p>*BIOL 215 acceptable to PA schools but does not count towards major or provide upper level credits.</p>	<p>Applies to freshmen and transfer students entering in 2012-2013 or later</p> <p><u>Regarding Biology degree requirements:</u></p> <p>Must take BIOL 205+207 (not BIOL 208)</p> <p>Must take BIOL 408 or 409 (not BIOL 405)</p> <p>BIOL 325 and CHEM 330 recommended over the other options</p> <p>Need ONE Physics course (PHYS 211or241)</p> <p>Need only ONE biology elective course</p> <p><u>Also need one of the following:</u></p> <ul style="list-style-type: none"> GEOL 121-Phys Geology (4) GEOL 123-Hist Geology (4) ASTR 161-Gen Astronomy (4) GEOG 377-Descrip Meteorology (4) <p><u>For teaching certification must have:</u></p> <p>SEMS 110-Teach 1 (1) SEMS 120-Teach 2 (1) SEMS 230-Knowing & Learning (3) SEMS 240-Classroom Interactions (3) SEMS 250-Persp Sci and Math (3)(Core 5) SEMS 360-Research Methods (3)(Core 9) SEMS 370-Project based Instruction (3) SEMS 498-Internship in Sec Math Sci (2) SCIE 380-Teach Science in Sec School (3) SCIE 393-Stdnt Tch Sec Ed Science (12) SCIE 430-Seminar in Student Teaching (1) SCED 460-Read&Writ in Sec Schools (4) SCED 461-Tch Reading in Sec Schools (3)</p> <p><u>Recommended Core Courses:</u></p> <p>Core 6: PSYC 101 or SOCI 101</p> <p>Core 10: EDUC 202</p> <p>Core 13: EDUC 203</p>