THE UNIVERSITY OF AKRON - REQUIREMENTS FOR A B.S. IN BIOLOGY

I. University General Education Requirements –

You MUST complete the following courses within your first 48 credits at UA:

- **Speech**
- **English I and II**
- **Math (through 3450:145 College Algebra)**

A. SPEECH - 3 credits.

7600:105 Intro. to Public Speaking, 3 credits
OR 7600:106 Eff. Oral Communication, 3 credits
OR 2540:263 Professional Communications and Presentation, 3 credits (not recommended)

B. ENGLISH COMPOSITION - 7 credits of 2 sequential courses.

3300:111 English Composition I, 4 credits **AND** 3300:112 English Composition II, 3 credits
OR 3300:113 African American (AA) Language & Culture I, 4 cr. **AND** 3300:114 AA Lang. & Cult. II, 3 cr.
OR 2020:121 English, 4 credits **AND** 2020:222 Technical Report Writing, 3 credits (not recommended)

C. PHYSICAL EDUCATION/WELLNESS- 1 credit.

5540:120-150	Physical Education	0.5-1 cr.	7400:133	Nutrition Fundamentals	3 cr.
5540:190	Physical Education	0.5-2 cr.	7510:126	Marching Band	1 cr.
5550:150	Concepts of Health & Fitness	3 cr.	7900:119/120	Intro. Modern Dance I/II	2 cr.
5550:194	Sports Officiating	2 cr.	7900:124/125	Intro. Ballet I/II	2 cr.
5550:211	First Aid & CPR	2 cr.	7900:130/230	Intro. Jazz Dance I/II	2 cr.
5570:101	Personal Health	2 cr.	7900:144	Tap Dance I	2 cr.

D. SOCIAL SCIENCES - 6 credits. Select 2 courses for 6 credits from 2 different sets (Sets 1 - 7)

Set 1.	3250:100	Introduction to Economics	3 cr.	Set 5.	3850:100	Intro. to Sociology	4 cr.
	3250:200	Prin. of Microeconomics	3 cr.		3230:150	Cultural Anthropology	4 cr.
	3250:244	Intro. to Econ. Analysis	3 cr.		5100:150	Democracy in Educ.	3 cr.
	2040:247	Survey of Basic Economics	3 cr.				
				Set 6.	3400:250	US History to 1877	4 cr.
Set 2.	3350:100	Intro. to Geography	3 cr.		3400:251	US History since 1877	4 cr.
						(Both classes have lecture & discussion)	
Set 3.	3700:100	Govt. & Politics in US	4 cr.				
	3700:150	World Politics & Gov.	3 cr.	Set 7.	2040:241	Tech. of Human Values	2 cr.
	2040:242	American Urban Society	3 cr.		2040:243	Contemp. Global Issues	3 cr.
					3240:100	Intro. to Archaeology	3 cr.
Set 4.	3750:100	Intro. to Psychology	3 cr.		3600:125	Theory and Evidence	3 cr.
	(Recommended for professional school)						
	2040:240	Human Relations	3 cr.				

E. AREA STUDIES & CULTURAL DIVERSITY – 4 credits. Select 2 courses for 4 credits. For most courses, prerequisites include English II (3300:112 or the equivalent) and 32 credits. It is strongly recommended that you take courses which emphasize different cultural perspectives.

3400:285	World Civilization: China	2 cr.	2040:254	The Black Exp. 1619 to 1877	2 cr.
3400:286	World Civilization: Japan	2 cr.	2040:257	The Black Exp. 1877 to 1954	2 cr.
3400:287	World Civilization: SE Asia	2 cr.	2040:258	The Black Exp. 1954 to Pres.	2 cr.
3400:288	World Civilization: India	2 cr.	2040:256	Diversity in Am. Society	2 cr.
3400:289	World Civ.: Middle East	2 cr.	3002:201	Intro. Pan African Studies	3 cr.
3400:290	World Civilization: Africa	2 cr.	3350:275	Geo. of Cultural Diversity	2 cr.
3400:291	World Civ.: Latin America	2 cr.	1840:300	Intro. to Women's Studies	3 cr.
3501:210	Arabic Culture thru Film	2 cr.	3230:251	Human Diversity	3 cr.
3502:210	Chinese Culture thru Film	2 cr.	7600:325	Intercultural Communication	3 cr.
3560:204	Japanese Culture thru Film	2 cr.			

F. HUMANITIES - 3 courses (10 credits total).

1. Required: 3400:210 Humanities in Western Traditions I, 4 credits. Prerequisites include English II (3300:112, or the equivalent) and 32 earned credits. You must register for both the lecture and a required discussion section.

2. 6 additional credits: **Select 2 courses from 2 different sets (Sets 1-4).**
3400:210 Human. in Western Trad. I is usually the prerequisite for most other humanities classes.

Set 1 - Fine Arts - Prerequisite 3400:210

7100:210	Visual Arts Awareness	3 cr.
7500:201	Exp. Music: Bach - Rock	3 cr.
7800:301	Intro. to Theatre & Film	3 cr.
7900:200	Viewing Dance	3 cr.

Set 2 - Philosophy/Classics

3200:220	Intro. to Ancient World	3 cr.
3200:230	Sports & Society/ Greece	3 cr.
3200:289	Myth. of Ancient Greece	3 cr.
3600:101	Intro. to Philosophy	3 cr.
3600:120	Introduction to Ethics	3 cr.
3600:170	Introduction to Logic	3 cr.

Set 3 - Literature - Prerequisite 3400:210

3300:250	Classic & Contemp. Lit.	3 cr.
3300:251	Topics in World Literature	3 cr.
3300:252	Shakespeare and His World	3 cr.
3300:281	Fiction Appreciation	3 cr.
3200:361	Literature of Greece	3 cr.
3580:350	Lit. of Span.-Amer. in Trans	3 cr.

Set 4 - Humanities - Prerequisite 3400:210

3400:211	Humanities in West. Trad. II	3 cr.

II. Buchtel College of Arts & Sciences (BCAS) Requirement

A. Foreign Language (must complete through 202) or Sign Language (must complete through 222)

- Options include Spanish, French, German, Italian, Latin, Japanese, Chinese, or Arabic
- Series includes 101, 102 Beginning I and II (4 cr. ea.) and 201, 202 Intermediate I and II (3-4 cr. ea).
- A placement test is available for by-passing classes if you had more than two years of the same language in high school. Take the placement test in the Counseling & Testing Center, 304 Simmons Hall, 330.972.7084.
- You may purchase the credit for by-passed class(es) at $5.00/credit hour as long as you earn a C or better in the higher level course. See your academic adviser for a by-pass credit form once the higher level course is successfully completed.
- To start in any class other than 101 (Beginning I), you MUST meet with an academic adviser.
- FYI: First and/or second year may be taken credit/non-credit. (Must earn a C- to receive a grade of Cr.**)**
- To register for a class as Cr/NCr, you must register in person in Simmons.

Sign Language includes 5 courses: 7700:101, 102, 201, 202, and 222 Deaf Culture.

III. Biology Department Requirements – Effective Fall 2010

A. Mathematics – 8 credits
NOTE - MUST EARN C- OR HIGHER IN A CLASS TO TAKE NEXT LEVEL MATH CLASS.

1. REQUIRED: **3450:149 Precalculus, 4 credits** (prerequisite is based on ACT/SAT score or Placement Test or 3450:145 College Algebra, 4 credits)
AND **3470:261/262 Introduction to Statistics I & II, 2 credits each** (each class is half a semester) (prerequisite is based on ACT/SAT score or Placement Test or 3450:100 Intermediate Algebra, 3 credits)

2. OPTIONAL but recommended for students pursuing professional or graduate school:
3450:221 Analytical Geometry and Calculus I, 4 credits

B. <u>Chemistry</u> – 19 credits (includes Principles I and II and Organic Chemistry I and II and all labs)

F = Fall, S= Spring, SS = Summer Session listed after classes to indicate when classes are taught.

1. 3150:151 Principles of Chemistry I, 3 credits F, S, SS (Prerequisite is to be in or tested into 3450:149 Precalculus, i.e., to have completed 3450:145 College Algebra)
   3150:152 Principles of Chemistry Lab, 1 credit F, S, SS
   3150:153 Principles of Chemistry II, 3 credits F, S, SS
   3150:154 Qualitative Analysis, 2 credits S, SS (Laboratory Course)

2. 3150:263 Organic Chemistry I, 3 credits F, SS (Prerequisite is 3150:153)
   3150:265 Organic Chemistry I Lab, 2 credits F, SS (Prerequisite is 3150:154)
   3150:264 Organic Chemistry II, 3 credits S, SS
   3150:266 Organic Chemistry II Lab, 2 credits S, SS

3. Optional - For a Minor in Chemistry, 6 additional 300/400 credits are required; students generally take:
   3150:401 Biochemistry I (lecture only), 3 credits F, SS (Prerequisite is 3150:264)
   3150:402 Biochemistry II (lecture only), 3 credits S, SS

C. <u>Physics</u>

Physics is **<u>NOT</u>** required for a Biology degree, but is recommended. Physics **MUST** be taken by students anticipating professional school, and should be taken by students anticipating graduate school.

3650:261/262 Physics for Life Sciences I and II (with labs), 4 cr. ea. F-S, SS (prerequisite is 149 Precalculus)
3650:267/268 Computations I and II, 1 credit each (Optional) F-S, SS

D. <u>Biology</u> – 40 credits (21 credits of the core biology courses and 19 300/400 level biology credits)

F = Fall, S= Spring, SS = Summer Session listed after classes to indicate when classes are taught.

<u>When classes are to be taught is NOT guaranteed and is subject to change without notice</u>.

Requires a minimum of **40** credits of biology including:

1. **Core curriculum (21 credits):**
   3100:111 Principles of Biology I, 4 credits with a lab - F, SS (pre/corequisite is 3150:151 Prin. of Chem. I)
   3100:112 Principles of Biology II, 4 credits with a lab - S, SS (prerequisite is 3100:111 Prin. of Biology I)
   3100:111/112 are the minimum prerequisites for all higher level biology courses.
   3100: 211 General Genetics (no lab), 3 credits - F, SS
   3100: 217 General Ecology (no lab), 3 credits - F, S, maybe SS
   3100: 311 Cell & Molecular Biology (no lab), 4 credits - F, S (3100: 211 Genetics and 3150:151, 152, 153, and 154 Principles of Chemistry I and II are prerequisites)
   3100: 316 Evolutionary Biology (no lab), 3 credits – F, S, maybe SS (Genetics is NOT a prerequisite)

2. **19 credits <u>beyond</u> the core** (to reach 40) of upper level (300/400) **biology** (**<u>3100</u>**) courses.
   - Can take **<u>ANY</u>** 19 credits of 300/400 level biology (**3100**) courses except Workshops or 3100:470 Lab Regulations, 1 credit (the course is a Cr/NCr class).
   - May include up to 4 credits (2 per semester) of Biological Problems (i.e. independent research).

IV. Credits and GPA required for graduation

A. University Rules - minimum **128 credits** (includes transfer credits)

- Must have an overall **cumulative average** GPA of **2.0** or better (UA grades only).
- **NOTE - Most students will need to take elective credits beyond the minimum credits needed for the General Education and Biology requirements to reach 128 credits.**
- Grades of D- or higher apply toward graduation, if have a cumulative GPA of ≥2.0.

B. Buchtel College of Arts & Sciences (BCAS) - 47 credits at the 300/400 level.

- By following the above biology rules, you complete **45 of the 47 credits** at the 300/400 level (19 credits of chemistry, 3 cr. of Evolutionary Biology, 4 cr. of Cell and Molecular Biology, and 19 credits of 300/400 biology beyond the core).
- The following courses count toward the 2 remaining 300/400 level BCAS requirement:
  - Mathematics - Calculus (221 or 215 and above)
  - Physics for Life Sciences (or Elementary Classical Physics)
  - **ANY** 300/400 level course in **ANY** department except General Education courses or workshops

C. Biology Department - At least **40 credits** of Biology (21 core credits and 19 300/400 biology credits)

- Must have a **cumulative average** GPA of **2.0** or better in UA biology courses (transferred and transient biology courses are not included in calculation).
- Biology grades of D- or higher apply toward graduation, if you have a cumulative Biology GPA of at least a 2.0.
- Lower level biology courses that do not apply toward the biology degree CANNOT be included in the Biology GPA.

V. Minor in Chemistry (Optional)

- Must have a 2.0 cumulative Chemistry GPA
- Must complete 6 additional credits of 300/400 chemistry (3150) beyond Organic Chemistry
- See your adviser for details on how to apply for a minor

VI. Applying for Graduation via Zipline (http://www.uakron.edu/registrar/graduation/gradapp/index.dot)

The dates by which you must apply for graduation are:

September 15 for Spring (May) Graduation
February 15 for Summer (August) Graduation
May 15 for Fall (December) Graduation

If you plan to apply for a second degree, a second major, or a minor, please see an adviser for the appropriate form.

There is a $100.00 late fee to apply for graduation after the above dates.

BIOADVISING OFFICE:

The Biology Advising Office is located in ASEC D407 (around the corner from the main Biology Office). The walk-in hours for advising are posted on the Advising Office door and at the Department of Biology website (http://www.uakron.edu/biology/academics/). You can also contact an adviser at 330.972.7154 or at bioadvising@uakron.edu. In addition to counseling, contact the office if you need forms to add or drop a course, change majors/minors, discuss transfer or transient credits, etc.

Pre-professional preparation: pre-medical, pre-dental, pre-vet, and pre-pharmacy

**** This is provided only as a guide ****. You should research and contact the schools you are interested in attending for specific requirements.

Courses that we recommend:

A. 3100:363 Animal Physiology, 3 credits – F
   3100:364 Animal Physiology Lab, 1 credit – F
B. At least one of the following:
   3100:4XX 400-level Physiology Course, 3-4 credits
   3100:466 Vertebrate Embryology (with lab), 4 credits
   3100:467 Comparative Vertebrate Morphology (with lab), 4 credits - F (Anatomy Course)
   3100:473 Comparative Animal Physiology (no lab), 3 credits - S - Strongly recommended for pre-vet. (Animal Physiology is a prerequisite)
C. 3650:261/2 Physics for Life Sciences I & II (with labs), 4 credits each F-S, SS
D. One of the following:
   3450:221 Analytical Geometry and Calculus I, 4 credits F, S, SS (preferred course)
   3450:215 Concepts of Calculus I, 4 credits

NOTE: A biochemistry course is required for admission to OSU Veterinary School.

Courses that may be taken and are part of most medical school curricula:

3100:331 Microbiology (with lab), 4 credits
3100:365 Histology (with lab), 4 credits
3150:401/2 Biochemistry I and II (no labs), 3 credits each F-S, SS (does not count toward the 300/400 level biology credit requirements, but does count toward Chemistry Minor)

General Information for applying to medical school:

There are five state-supported medical schools in Ohio: OSU, Univ. of Cinn., Wright State (Dayton), Univ. of Toledo, and NEOUCOM. The Osteopathic Medical School is at OU (Athens).

Apply in the summer before your senior year (and have taken MCATs in Spring of Junior year). It is much more advantageous to take the Spring MCAT (than Summer MCAT) so you can apply early! Virtually all medical schools have a rolling admission process which begins in the summer.

MCAT - 4 sections: Verbal reasoning, Physical Sciences (Physics & Inorganic Chem.), Biological Sciences (Bio. & Organic Chemistry), each section is graded on a 1-15 scale with 15 being the best, need to score in the 8-9 range in each to **start** to be competitive. Fourth section is a Writing Sample - is graded on a J to T scale, with T being the best. Probably need an O to start to be competitive. MCAT is offered via Computer Based Testing and is offered 22 times per year. MCAT registration is online at www.aamc.org/mcat. It takes about one month to receive your results.

GPA: you will need at least 3.3-3.4 Cumulative and Science (Bio., Chem., Math, Physics) GPAs to start to be competitive. This includes ALL classes taken at all universities including any repeat for change of grade courses.

Medical field experience: volunteer at a hospital and/or nursing home and shadow physicians (this is critically important)

Get involved in some clubs or organizations: Biology, Future Physicians, Tri-Beta, Greek

You may want to do independent research – i.e. Biological Problems (4 credits count toward 3100:300/400 requirements)

"Schedule A" Sample Curriculum Guide - 16 credits per semester, on average

First Year

Fall Semester		Cr.	Spring Semester		Cr.
3450:100 or 145	Intermediate or College Algebra	3	3450:145 or 149	College Algebra or Precalculus	3-4
3300:111	English Composition I	4	3300:112	English Composition II	4
	Foreign Language	3-4		Speech (if not completed)	3
	Speech (Fall or Spring)	3		Foreign Language	3-4
	General Education Course(s)	2-6		General Education Course(s)	1-6

Second Year

ISpring Semester		Cr.
3100:112	Principles of Biology II + Lab	4
3150:153	Principles of Chemistry II + Recitation	3

Third Year

Fall Semester		Cr.	ing Semester		Cr.
3150:263	Organic Chem. I lecture	3	50:264	Organic Chemistry II lecture	3
3150:265	Organic Chem. I lab + Discussion	2	50:266	Organic Chemistry II lab + Discussion	2
3100:211	General Genetics	3	00:311	Cell & Molecular Biology	4
3100:316	Evolutionary Biology	3	3100:217	General Ecology (no lab)	3
3650:261	Physics for Life Sciences (optional)	4	3650:262	Physics for Life Sciences (optional)	4
	General Education Course(s)	1-5		General Education Course(s)	1-4
				Premedical students should take MCAT	

Fourth Year

Repeat MCAT in fall (premedical students) if so desired
Biology Electives (total 19 credits 3100:300/400 required)
Finish General Education Courses
401,402 Biochemistry (optional)
Apply for graduation via Zipline

General Information:

- FYI: Genetics is a prerequisite for many upper level biology courses.
- Talk to a faculty member in the department who is in your field of interest for advice about graduate programs and career opportunities (see http://www.uakron.edu/biology/).
- Take Physics and Calculus if you plan to go to graduate or professional school.
- Do a Biological Problem (independent research) if you plan to go to graduate school. Four credits can apply toward the required 3100:300/400 level biology credits (2 credits per semester max).
- To earn a minor in chemistry, 6 additional credits of 300/400 chemistry beyond Organic Chemistry are required.
- Other Minors - see the general Bulletin for requirements.

"Schedule B" Sample Curriculum Guide - 16 credits per semester, on average

First Year

Fall Semester		Cr.	Spring Semester		Cr.
3100:111	Principles of Biology I + Lab	4	3100:112	Principles of Biology II + Lab	4
3150:151	Principles of Chem. I + Recitation	3	3150:153	Principles of Chemistry II + Recitation	3
3150:152	Principles of Chem. I Lab	1	3150:154	Qualitative Analysis (lab)	2
3450:149	Precalculus	4	3150:221	Calculus (optional)	4
3300:111	English Composition I	4	3470:261/262	Intro to Stats I & II (ea. half semester)	4
	Foreign Language	3-4	3300:112	English Composition II	3
				Foreign Language	3-4

Second Year

Fall Semester		Cr.	Spring Semester		Cr.
3150:263	Organic Chem. I lecture	3	3150:264	Organic Chemistry II lecture	3
3150:265	Organic Chem. I lab + Discussion	2	3150:266	Organic Chemistry II lab + Discussion	2
3100:211	General Genetics	3	3100:311	Cell & Molecular Biology	4
	Speech	3	3100:217	General Ecology (no lab), also in F	3
3100:316	Evolutionary Biology, also taught in S	3		Foreign Language (if not completed)	3-4
	Foreign Language	3-4	3470:261/262	Intro to Stats I & II (if not completed)	4
3470:261/262	Intro to Stats I & II (if not completed)	4		General Education Courses	

Third Year

Evolutionary Biology, if not done earlier
Cell & Molecular Biology, if not done earlier
Biology Electives (total 19 credits 3100:300/400)
General Education Courses
Finish Foreign Language (if not completed)
401,402 Biochemistry (optional)
261/262 Physics for Life Sciences (optional)
Premedical students should take MCAT in the spring

Fourth Year

Repeat MCAT in fall (premedical students) if so desired
Biology Electives (total 19 credits 3100:300/400 required)
Finish Foreign Language (if not completed)
Finish General Education Courses
401,402 Biochemistry (optional)
Apply for graduation via Zipline

General Information:

- FYI: Genetics is a prerequisite for many upper level biology courses.
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