

**BACHELOR OF SCIENCE IN ANIMAL SCIENCE
Science Concentration (SAS)*****

Department of Animal Science, North Carolina State University, Raleigh, NC 27695-7621
Degree Audit Code: 11SAS056

printed May 07, 2008

FRESHMAN YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
ALS 103 Introductory Topics in ALS	1	CH 101 Chem - A Molecular Science**	3
ANS 150 Intro to Animal Science**	4	CH 102 General Chemistry Lab	1
BIO 181* Intro Bio: Ecol., Evol., Biodiv.	4	Animal Science Course ⁴	3
ENG 101 Acad. Writing & Research **	4	MA 121 Elements of Calculus <u>or</u>	
MA 107 Precalculus I**	<u>3</u>	MA 131 Calc for Life & Mgt Sci A	3
Total	<u>16</u>	BIO 183* Intro Bio: Cell. & Molec. Biol.	<u>4</u>
		Total	<u>14</u>

SOPHOMORE YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
ANS 205 & 206 Phys. & Anat. Dom. An.	4	ANS 220 Repro & Lact of Dom Anim	4
ANS 215 Basic Agric Genetics <u>or</u> CALS Group A, B, or C Elective ^{5,9}	3	CH 223 Organic Chemistry II & lab	4
ARE 201 Intro to Ag & Resource Ec <u>or</u> EC 205 Fundamentals of Economics	3	ST 311 Intro to Statistics	3
CH 221 Organic Chemistry I & lab	4	H/SS GER Elective from list ^{2,8}	3
Writing/Speaking Elective ³	<u>3</u>	Physical Education Elective ¹	<u>1</u>
Total	<u>17</u>	Total	<u>15</u>

JUNIOR YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
ANS 230 Nutr of Domestic Animals	4	GN 311 Principles of Genetics <u>or</u> CALS Group A, B, or C Elective ^{5,9}	4
CH 201 Chemistry - A Quant Science	3	PY 212 College Physics II	4
CH 202 Quantitative Chemistry Lab	1	Physical Education Elective ¹	1
MB 351 General Microbiology	3	H/SS GER Elective from list ^{2,8}	3
MB 352 Microbiology Lab	1	ANS Management Elective ⁷	<u>3</u>
PY 211 College Physics I	<u>4</u>	Total	<u>15</u>
Total	<u>16</u>		

SENIOR YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
ANS Discipline Course Elective ⁶	3	ANS Discipline Course Elective ⁶	3
H/SS GER Elective from list ^{2,8}	9	Animal Science Course ⁴	2
Free Elective ⁸	<u>3</u>	H/SS GER Elective from list ^{2,8}	3
Total	<u>15</u>	Free Elective ⁸	<u>6</u>
		Total	<u>14</u>

Minimum Credit Hours Required for Graduation: 122

- * ZO 160 will fulfill the BIO 183 requirement. Students with credit for ZO 160 are not required to take BIO 181 and can replace the 4 credits of BIO 181 with any CALS Group A,B,C elective.
- ** ANS 150, MA 107, ENG 101, and CH 101 must be completed with a grade of C-minus or higher, and the student should repeat the course in the semester following the initial attempt if less than a C-minus is earned.
- *** Use of animals and animal specimens is critical to our educational program. To obtain full credit for Animal Science courses, students are required to participate in laboratory procedures involving animals and animal specimens. All activities with live animals are IACUC (Institutional Animal Care and Use Committee) approved. Many lectures also incorporate animals or animal specimens into the course.

SAS Semester-By-Semester Footnotes:

- ¹ PE 100 Series Fitness & Wellness course and one additional credit of a PE activity course are required.
- ² These courses must be selected from the **approved General Education Requirement (GER) listing** for Humanities and Social Sciences as follows: 3 credits from History; 3 credits from Literature; 3 credits from Philosophy, Religion, or Visual and Performing Arts; 3 credits from Psychology or Politics and Government or Sociology or Anthropology or Cultural Geography; 3 credits of Science Technology and Society *from a humanities and social science perspective*. The final 3 credits may be from any courses in the aforementioned categories or Humanities/Social Sciences Additional list. At least one course in the Humanities and Social Sciences must focus on a non-English speaking culture (designated with an asterisk on the GER list). **Courses must be selected from the approved GER List for each category.** This list is updated on a regular basis; check the World Wide Web at: <http://www.ncsu.edu/uap/academic-standards/ger/hss/courses.htm>
- ³ Select Advanced Writing, Communication/Speech, or **200-level or higher Foreign Language from the GER list.** See: <http://www.ncsu.edu/uap/academic-standards/ger/wrtspk/awsfcrs.htm#home>
Note: Pre-vet students should choose COM 110, COM 112, or COM 211.
- ⁴ VMP 420 or any Animal Science (ANS) course (except ANS 225, ANS 301, ANS 480, ANS 492, ANS 493) that is not fulfilling another requirement can fulfill this Animal Science Elective category.
- ⁵ Students who are planning to apply to a College of Veterinary Medicine should take BCH 451 (Principles of Biochemistry) and a business course (BUS, ARE, EC, or ACC prefix) to fill the A,B,C elective category. Many graduate schools also require Biochemistry. Other students: take any courses from the College of Agriculture and Life Sciences Group A, Group B, or Group C electives (<http://harvest.cals.ncsu.edu/index.cfm?showpage=25>).
- ⁶ Total of 6 credit hours is required from the following approved Animal Science Discipline Courses (each course = 3 credit hours): ANS(NTR, PO) 415, Comparative Nutrition; ANS(NTR) 419, Human Nutrition in Health and Disease; ANS 440, Selection of Domestic Animals; ANS 452, Advanced Reproductive Physiology and Biotechnology; ANS 453, Growth & Development of Domestic Animals; ANS 454, Lactation, Milk, and Nutrition; VMP 420, Diseases of Farm Animals; or any 500-level ANS course.
- ⁷ Students must select at least one animal management course from the following list: ANS 400, Companion Animal Management; ANS 402, Beef Cattle Mgt; ANS 403, Swine Management; ANS 404, Dairy Cattle Management; ANS 408, Small Ruminant Management; ANS 410, Equine Management; or ANS 411, Management of Growing and Performance Horses.
- ⁸ Students are encouraged to take an Ethics course as part of their Human. & Social Sci or Free Elec.
- ⁹ Students are required to take ANS 215 (Basic Ag Genetics) or GN 311(Principles of Genetics - formerly numbered GN 411). Students who choose to take both should take ANS 215 before GN 311. For students who choose to take both, ANS 215 will count as an Animal Science departmental elective or a CALS group A elective. Pre-vet students: GN 311 is a vet-school required course.

Foreign Language Requirement All students are required to demonstrate proficiency in a foreign language at the FL_102 level. Proficiency may be demonstrated in any one of the following ways:

1. Two years of the same foreign language in high school with a "C" or higher in each of the two years;
2. Advanced Placement (AP) credit or Transfer Credit for FL_102;
3. Proficiency at the FL_102 level based on the NCSU Foreign Language Placement Exam.

All students not meeting the above proficiency requirements will be required to successfully complete through the FL_102 level at N.C. State University. Foreign Language 101 credit hours will not count toward graduation unless it is for a language other than the one the student is earning proficiency in.

SAS Curriculum by Course Category Display

BACHELOR OF SCIENCE IN ANIMAL SCIENCE, Science Concentration (SAS)
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<u>Course</u>	<u>Title</u>	<u>Credit/Hrs</u>	<u>Totals</u>
ALS 103	Introductory Topics in Ag & Life Sciences (freshmen) <u>or</u> ALS 303, Prof. Dvpt. & Career Opportunities (transfer students)	1	1
English and Communication (7 credits)			
ENG 101**	Academic Writing and Research	4	
Writing/Speaking:	from the GER list: Advanced Writing, Communication/Speech, or 200-level or higher Foreign Language; see http://www.ncsu.edu/uap/academic-standards/ger/wrtspk/awsfcrs.htm#home (Pre-vet: Choose COM 110, COM 112, or COM 211)	3	
Foreign Language	Proficiency at the FL_102 level required for graduation (See page 2 for explanation of foreign language requirement)	0	7
Humanities & Social Sciences*** (21 credits)			
	Science, Techn & Society Elective from Hum & Soc Sci Perspective (see GER list)	3	
	History Elective (see GER list)	3	
	Literature Elective (see GER list)	3	
	Philosophy <u>or</u> Religion <u>or</u> Visual & Performing Arts Elective (see GER list)	3	
ARE/EC elective:	ARE 201 Intro to Ag and Resource Economics <u>or</u> EC 205 Fundamentals of Economics	3	
	Psych <u>or</u> Polit & Gov <u>or</u> Sociology <u>or</u> Anthr <u>or</u> Cultur Geog Elective (see GER list)	3	
	Hum/Soc Sci Elective (from any of the above lists <u>or</u> Hum/Soc Sci additional list)	3	21
***At least one course must focus on a non-English speaking culture. See GER (General Education Requirement) list of approved Humanities & Social Sciences for courses that fulfill these requirements. Pick up a current GER list from 102 Polk Hall, or check the web at: http://www.ncsu.edu/uap/academic-standards/ger/hss/courses.htm			
Mathematics and Natural Sciences (26 credits)			
MA 107**	Precalculus I	3	
Calculus:	MA 121 Elements of Calculus <u>or</u> MA 131 Calculus for Life and Management Sciences	3	
CH 101**	Chemistry - A Molecular Science	3	
CH 102	General Chemistry I Lab	1	
CH 201	Chemistry - A Quantitative Science	3	
CH 202	Quantitative Chemistry Lab	1	
PY 211 & lab	College Physics I	4	
PY 212 & lab	College Physics II	4	
ZO 160* & lab	Intro to Cellular and Developmental Zoology <u>or</u> BIO 183, Intro Bio: Cellular & Molecular Biology*	4	26
Science Option Requirements (26 credits)			
Genetics	ANS(HS) 215 Basic Agricultural Genetics <u>or</u> GN 311 Principles of Genetics (GN 311= vet school required)	3 or 4	
CH 221 & lab (CH 222)	Organic Chemistry I and lab	4	
CH 223 & lab (CH 224)	Organic Chemistry II and lab	4	
MB 351	General Microbiology	3	
MB 352	General Microbiology Lab	1	
ST 311	Intro to Statistics	3	
Group A, B, or C electives		7 or 8	26

Note: Pre-Vet students must take BCH 451 and a second business course (BUS, ARE, EC, or ACC prefix) in order to be eligible to apply for Vet School. Many graduate schools also require Biochemistry. Other students - choose courses from the College of Agriculture and Life Sciences Group A, Group B, or Group C electives:

<http://harvest.cals.ncsu.edu/index.cfm?showpage=25>

Departmental Requirements** (16 credits)**

ANS 150** & lab	Introduction to Animal Science (Fall, Spring)	4	
ANS 205 & lab (ANS 206)	Physiology & Anatomy of Domestic Animals (Fall, Spring)	4	
ANS 220 & lab	Reproduction and Lactation of Domestic Anim (Fall, Spring)	4	
ANS 230 & lab	Nutrition of Domestic Animals (Fall, Spring)	4	16

Departmental Electives** (select 14 credits; at least 6 credits must be from Discipline Courses● and at least 3 credits must be from Animal Management Courses**)**

ANS 105	Introduction to Companion Animals (Fall, Spring)	3	
ANS 110	Introduction to Equine Science (Fall, Spring; online in summer)	3	
ANS 201 (lab)	Techniques of Animal Care (Fall, Spring)	2	
ANS(HS) 215	Basic Agricultural Genetics (Fall)	3	
ANS 303 & lab	Principles Equine Evaluation (Spring)	2	
ANS 304 & lab	Dairy Cattle Evaluation (Spring)	2	
ANS 309 & lab	Livestock Evaluation (Spring)	3	
ANS(FS) 322 & lab	Muscle Foods & Eggs (Fall)	3	
ANS(FS) 324 (online)	Milk and Dairy Products (Fall online, Spring online)	3	
ANS 330	Laboratory Animal Science (Spring)	3	
ANS 400 & lab**	Companion Animal Management (Spring)	3	
ANS 402 & lab**	Beef Cattle Management (Spring)	3	
ANS 403 & lab**	Swine Management (Fall)	3	
ANS 404 & lab**	Dairy Cattle Management (Fall, odd years)	3	
ANS 408 & lab**	Small Ruminant Management (Fall, even years)	3	
ANS 410 & lab**	Equine Management (Spring)	3	
ANS 411 & lab**	Management of Growing and Performance Horses (Fall)	3	
ANS(NTR, PO) 415●	Comparative Nutrition (Fall; also online in fall, spring, and summer)	3	
ANS(NTR) 419●	Human Nutrition in Health and Disease (Spring)	3	
VMP 420●	Diseases of Farm Animals (Spring)	3	
ANS(PO) 425 & lab	Feed Mill Management (Spring; also online in fall, spring, summer)	3	
ANS 440●	Selection of Domestic Animals (Fall; also online in fall)	3	
ANS 452●	Advanced Reproductive Physiology (Spring, odd years)	3	
ANS 453●	Growth & Development of Domestic Anim (Fall, even years)	3	
ANS 454●	Lactation, Milk, and Nutrition (Spring, even years)	3	
ANS 5**●	Any 500-level letter-graded ANS course	3	14

**Animal Management Courses ●Discipline Courses

Free Electives (9 credits) Free electives may be taken on a credit-only basis (S/U grading). . . . 9 9

A student may earn up to 6 credit hours of free electives for any combination (maximum 3 hours per experience) of ANS 492 (External Learning Experience) or ANS 493 (On-campus Learning Experience).

Physical Education (2 credits)

PE 10_	(Any PE 100-Level Course)	1	
PE Elective		1	2

PE courses may be taken credit-only (S/U)

MINIMUM HOURS REQUIRED FOR GRADUATION 122

- ** ANS 150, MA 107, ENG 101, and CH 101 must be completed with a grade of C-minus or higher, and the student should repeat the course the semester following the initial attempt if less than a C-minus is earned.
- * BIO 183 (Intro. Bio: Cellular & Molecular Biology) requires BIO 181 as a pre-requisite. Advanced Placement (AP) credit or transfer credit for BIO 183 will fulfill the ZO 160 requirement, but ZO 150 (Animal Diversity) will not.
- **** Use of animals and animal specimens is critical to our educational program. To obtain full credit for Animal Science courses, students are required to participate in laboratory procedures involving animals and animal specimens. All activities with live animals are IACUC (Institutional Animal Care and Use Committee) approved. Many lectures also incorporate animals or animal specimens into the course.

Students are encouraged to take an Ethics course as part of their Humanities and Social Sciences or Free Electives.