

**BACHELOR OF SCIENCE IN ANIMAL SCIENCE
Industry/Business Concentration (IAS)*****

Department of Animal Science, North Carolina State University, Raleigh, NC 27695-7621
Degree Audit Code: 11IAS056

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	ANS Applied Sci & Techn Elective ⁴	3
ENG 101 Acad. Writing & Research **	4	MA 114 Intro Finite Math Appl <u>or</u>	
MA 107 Precalculus I**	<u>3</u>	MA 121 Elements of Calculus <u>or</u>	
Total	<u>16</u>	MA 131 Calc for Life & Mgt Sci A	3
		BIO 183* Intro Bio: Cell. & Molec. Biol.	4
		PE 100 Series, Fitness & Wellness ¹	<u>1</u>
		Total	<u>15</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 Dom Anim	4
ANS 215 Basic Agric Genetics	3	CH 220 Intro Organic Chemistry <u>or</u>	
ARE 201 Intro to Ag & Resource Ec <u>or</u>		CH 221 Organic Chemistry I with lab	4
EC 205 Fundamentals of Economics	3	ST 311 Intro to Statistics <u>or</u>	
CH 201 Chemistry - A Quant Science	3	ST(BUS) 350 Econ & Bus Statistics	3
CH 202 Quantitative Chemistry Lab	1	H/SS GER Elective from list ^{2,9}	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, Nutrition of Domestic Anim.	4	CALS group A, B, or C elective ⁶	4
PY 131 Conceptual Physics	4	Economics or Business Elective ⁵	3
Economics or Business Elective ⁵	3	ANS Applied Sci & Techn Elective ⁴	2
Free Elective ⁹	<u>3</u>	H/SS GER Elective from list ^{2,9}	<u>6</u>
Total	<u>14</u>	Total	<u>15</u>

SENIOR YEAR

<i>Fall Semester</i>	<i>Credits</i>	<i>Spring Semester</i>	<i>Credits</i>
ANS Management Elective ⁷	3	ANS Discipline Elective ⁸	3
H/SS GER Elective from list ^{2,9}	6	ANS Management Elective ⁷	3
Free Elective ⁹	3	H/SS GER Elective from list ^{2,9}	3
CALS group A, B, or C elective ⁶	<u>3</u>	Free Elective ⁹	3
Total	<u>15</u>	CALS group A, B, or C elective ⁶	<u>3</u>
		Total	<u>15</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 should 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.

IAS 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>
- 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 Economics or Business Elective
 - A. One course in management or marketing selected from the following:

ARE 303 Farm Management	ARE 311 Agricultural Markets
ARE 304 Agribusiness Management	ARE 312 Agribusiness Marketing
 - B. One course from the following:

ACC 200 Intro to Managerial Accounting	ARE 312 Agribusiness Marketing
ARE 303 Farm Management	ARE 321 Agricultural Financial Management
ARE 304 Agribusiness Management	BUS(MIE) 310 Intro Entrepreneurship
ARE 306 Agricultural Law	BUS 320 Financial Management
ARE 309, Environmental Law & Econ. Pol.	BUS(MIE) 330 Human Resource Management
ARE 311 Agricultural Markets	BUS 360 Marketing Methods
- ⁶ Must be chosen 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>) to total at least 14 credits.
- ⁷ Students must select at least two animal management courses (6 credits) from the following list (each is 3 credits): ANS 400, Companion Animal Management; ANS 402, Beef Cattle Management; 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 Course must be selected from the list of approved Animal Science Discipline Courses. Total of 3 credit hours is required from the following (each is 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.
- ⁹ Students are encouraged to take an Ethics course as part of their Humanities and Social Sciences or Free Electives.

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.

IAS Curriculum by Course Category Display
BACHELOR OF SCIENCE IN ANIMAL SCIENCE, Industry/Business Concentration (IAS)
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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	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
<i>***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</i>			
Mathematics and Natural Sciences (25 credits)			
MA 107**	Precalculus I	3	
Second Math course:	MA 114 Intro to Finite Math with Applications <u>or</u> 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	
ZO 160*	Intro to Cellular and Developmental Zoology <u>or</u> BIO 183, Introductory Biology II*	4	
PY 131	Conceptual Physics	4	
ANS(HS) 215	Basic Agricultural Genetics	3	25
Industry Option Requirements (27 credits)			
Organic Chem:	CH 220 Intro Organic Chem (preferred) <u>or</u> CH 221 Organic Chem I with lab (CH 222)	4	
Statistics:	ST 311 Introduction to Statistics <u>or</u> ST(BUS) 350 Economics and Business Statistics	3	
Select 3 credit hours from the following management/marketing courses:			
	ARE 303 (Farm Management) <u>or</u> ARE 304 (Agribusiness Management) <u>or</u> ARE 311 (Agricultural Markets) <u>or</u> ARE 312 (Agribusiness Marketing)	3	
Select 3 credit hours from the following economics/business courses:			
	ACC 200 (Intro Managerial Accounting) <u>or</u> ARE 303 (Farm Management) <u>or</u> ARE 304 (Agribusiness Management) <u>or</u> ARE 306 (Agricultural Law) <u>or</u> ARE 309 (Environmental Law) <u>or</u> ARE 311 (Agricultural Markets) <u>or</u> ARE 312 (Agribusiness Marketing) <u>or</u> ARE 321 (Agricultural Fin Mgmt) <u>or</u> BUS(MIE) 310 (Intro Entrepreneurship) <u>or</u> BUS 320 (Financial Management) <u>or</u> BUS(MIE) 330 (Human Resource Mgmt) <u>or</u> BUS 360 (Marketing Methods)	3	
College of Agriculture and Life Sciences Group A, Group B, or Group C electives: (14 credits) see: http://harvest.cals.ncsu.edu/index.cfm?showpage=25 (Recommend a computer course; CS 312, Grassland Management; Economics and Business courses; Microbiology)			
		14	27

<u>Course</u>	<u>Title</u>	<u>Credit/Hrs</u>	<u>Totals</u>
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** (14 credits)**

Select 5 credits from Applied Animal Science and Technology 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 303 & lab [□]	Principles Equine Evaluation (Spring)	2	
ANS 304 & lab [□]	Dairy Cattle Evaluation	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)	2	
ANS 330 [□]	Laboratory Animal Science (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	

Select 3 credits from Animal Science Discipline Courses[●]

ANS(NTR, PO) 415 [●]	Comparative Nutrition (Fall; also online in fall, spring, and summer)	3	
ANS(NTR) 419 [●]	Human Nutrition in Health & Disease (Spring)	3	
ANS 440 [●]	Selection of Domestic Animals (Fall)	3	
ANS 452 [●]	Advanced Reproductive Physiology (Spring, odd years)	3	
ANS 453 [●]	Growth & Development of Domestic Animals (Fall, even years)	3	
ANS 454 [●]	Lactation, Milk, and Nutrition (Spring, even years)	3	
ANS 5** [●]	Any 500-level letter-graded ANS course	3	

Select 6 credits from Animal Management Courses⁺⁺

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	14

⁺⁺Animal Management Courses [●]Discipline Courses [□]Applied Animal Sci & Technology 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 in the semester following the initial attempt if less than a C-minus is earned.
- * BIO 183 (Intro. Bio: Cell. & 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.

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