

COMPUTER SCIENCE + ANIMAL SCIENCES, BS

for the degree of Bachelor of Science Major in Computer Science + Animal Sciences

Computer Science + Animal Sciences (CS + ANSC) is a first-of-its-kind partnership between The Grainger College of Engineering's Department of Computer Science and the Department of Animal Sciences in ACES. Students will be prepared to work with sensor technology, large data sets, and predictive analytics, all aimed at improving the health and well-being of production animals and pets.

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Graduation Requirements

Minimum hours required for graduation: 126 hours.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300 and 400 level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (<https://studentcode.illinois.edu/article3/part8/3-801/>) (§ 3-801) and in the Academic Catalog (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>). Some Gen Ed requirements may be met by courses required and/or electives in the program.

| Code | Title | Hours |
|------|---|-------|
| | Composition I | 4-6 |
| | Advanced Composition | 3 |
| | Humanities & the Arts (6 hours) | 6 |
| | Natural Sciences & Technology (6 hours) fulfilled by CHEM 102 & CHEM 104 | 6 |
| | Social & Behavioral Sciences (6 hours) fulfilled by ECON 102 or ACE 100 and one more course approved as Social & Behavioral Sciences | 6 |
| | Cultural Studies: Non-Western Cultures (1 course) | 3 |
| | Cultural Studies: US Minority Cultures (1 course) | 3 |
| | Cultural Studies: Western/Comparative Cultures (1 course) | 3 |
| | Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I) | 6-8 |
| | fulfilled by MATH 220 or MATH 221, MATH 231, CS 124, CS 128, and CS 225 | |
| | Language Requirement (Completion of the third semester or equivalent of a language other than English is required) | 0-15 |

| Code | Title | Hours |
|------------------------------|---|--------|
| Department Foundation | | |
| Communication Option: | | 3 or 6 |
| CMN 101 | Public Speaking | |
| ALEC 115 | Let's Talk about Food, Agriculture, and the Environment | |
| CMN 111 & CMN 112 | Oral & Written Comm I and Oral & Written Comm II | |
| CHEM 102 & CHEM 103 | General Chemistry I and General Chemistry Lab I | 4 |
| CHEM 104 & CHEM 105 | General Chemistry II and General Chemistry Lab II | 4 |
| ECON 102 or ACE 100 | Microeconomic Principles Introduction to Applied Microeconomics | 3 or 4 |
| MATH 220 or MATH 221 | Calculus Calculus I | 4 or 5 |
| MATH 225 or MATH 257 | Introductory Matrix Theory Linear Algebra with Computational Applications | 2 or 3 |
| MATH 231 | Calculus II | 3 |
| CS 361 | Probability & Statistics for Computer Science | 3 |

Computer Sciences Core

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|------------------|---|--------|
| CS 100 | Computer Science Orientation | 1 |
| CS 124 | Introduction to Computer Science I | 3 |
| CS 128 | Introduction to Computer Science II | 3 |
| CS 173 | Discrete Structures | 3 |
| CS 222 | Software Design Lab | 1 |
| CS 225 | Data Structures | 4 |
| CS 374 | Introduction to Algorithms & Models of Computation | 4 |
| CS 357 or CS 421 | Numerical Methods I Programming Languages & Compilers | 3 or 4 |

Computer Science Technical Track (two options)

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|----------------------------|--|--|
| CS 233 & CS 341 | Computer Architecture and System Programming | |
| OR | | |
| CS 340 | Introduction to Computer Systems | |
| & Two 400-level CS courses | Any two (2) 400-level CS courses above CS 403 except CS 421 and CS 491 | |

Animal Sciences Core

| | | |
|----------|---|---|
| ANSC 100 | Intro to Animal Sciences | 4 |
| ANSC 221 | Cells, Metabolism and Genetics | 3 |
| ANSC 222 | Anatomy and Physiology | 3 |
| ANSC 223 | Animal Nutrition | 3 |
| ANSC 224 | Animal Reproduction and Growth | 4 |
| ANSC 398 | UG Experiential Learning (must be taken for a letter grade) | 1 |
| ANSC 498 | Integrating Animal Sciences | 2 |

Applied Animal Sciences Courses (choose 3)

| | | |
|----------|--------------------------------|---|
| ANSC 201 | Principles of Dairy Production | 9 |
| ANSC 205 | World Animal Resources | |
| ANSC 206 | Horse Management | |
| ANSC 211 | Meat Animal Evaluation | |
| ANSC 250 | Companion Animals in Society | |

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| ANSC 301 | Food Animal Production, Management, and Evaluation |
| ANSC 305 | Human Animal Interactions |
| ANSC 307 | Companion Animal Management |
| ANSC 309 | Meat Production and Marketing |
| ANSC 310 | Meat Selection and Grading |
| ANSC 312 | Advanced Livestock Evaluation |
| ANSC 313 | Horse Appraisal |
| ANSC 314 | Adv Dairy Cattle Evaluation |
| ANSC 322 | Livestock Feeds and Feeding |
| ANSC 370 | Companion Animal Policy |
| ANSC 400 | Dairy Herd Management |
| ANSC 401 | Beef Production |
| ANSC 402 | Sheep and Goat Production |
| ANSC 403 | Pork Production |
| ANSC 404 | Poultry Science |
| ANSC 407 | Animal Shelter Management |
| ANSC 424 | Pet Food & Feed Manufacturing |
| ANSC 435 | Milk Quality and Udder Health |
| ANSC 470 | Companion Animal Cruelty Investigations |
| ANSC 471 | ANSC Leaders & Entrepreneurs |
| ANSC 500 | Feeds in Dairy Nutrition and Diet Formulation |
| ANSC 501 | Nutritional Impact on Cow Health and Disorders |
| ANSC 502 | What is Milk and Milk Quality |
| ANSC 580 | Artificial Intelligence and Computer Vision for Precision Management |
| Basic Animal Sciences Courses (choose 3) | |
| ANSC 251 | Epidemics and Infectious Diseases |
| ANSC 306 | Equine Science |
| ANSC 350 | Principles of Biochemistry in Animals |
| ANSC 363 | Behavior of Domestic Animals |
| ANSC 366 | Animal Behavior |
| ANSC 406 | Zoo Animal Conservation Sci |
| ANSC 409 | Meat Science |
| ANSC 420 | Ruminant Nutrition |
| ANSC 421 | Minerals and Vitamins |
| ANSC 422 | Companion Animal Nutrition |
| ANSC 431 | Advanced Reproductive Biology |
| ANSC 438 | Lactation Biology |
| ANSC 440 | Applied Statistical Methods I |
| ANSC 441 | Human Genetics |
| ANSC 444 | Applied Animal Genetics |
| ANSC 445 | Statistical Methods |
| ANSC 446 | Population Genetics |
| ANSC 449 | |
| ANSC 450 | Comparative Immunobiology |
| ANSC 451 | Microbes and the Anim Indust |
| ANSC 452 | Animal Growth and Development |
| ANSC 454 | Neuroimmunology |
| ANSC 464 | Physiology of Animal Stress & Disease |
| ANSC 467 | Applied Animal Ecology |

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| ANSC 480 | Introduction to Coding and Precision Management |
| ANSC 520 | Protein and Energy Nutrition |
| ANSC 521 | Regulation of Metabolism |
| ANSC 522 | Advanced Ruminant Nutrition |
| ANSC 523 | Techniques in Animal Nutrition |
| ANSC 524 | Nonruminant Nutrition Concepts |
| ANSC 525 | Topics in Nutrition Research |
| ANSC 526 | Adv Companion Animal Nutrition |
| ANSC 533 | Repro Physiology Lab Methods |
| ANSC 541 | Regression Analysis |
| ANSC 542 | Applied Bioinformatics |
| ANSC 543 | Bioinformatics |

| Code | Title | Hours |
|--------------------|-------|------------|
| Total Hours | | 126 |

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Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements page (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

First Year

| First Semester | Hours | Second Semester | Hours |
|---------------------------------------|-----------|---------------------------------------|-----------|
| CS 100 | 3 | 1 CS 128 | 3 |
| CS 124 | 3 | 3 CS 173 | 3 |
| MATH 220 or 221 | 4 | 4 MATH 231 | 3 |
| Composition I or Communication Option | 4 | 4 CHEM 102 | 3 |
| ANSC 100 | 4 | 4 CHEM 103 | 1 |
| | | Composition I or Communication Option | 3 |
| | 16 | | 16 |

Second Year

| First Semester | Hours | Second Semester | Hours |
|----------------|-------|---|-------|
| CS 222 | 3 | 1 Language Other than English (3rd level) | 4 |
| CS 225 | 4 | 4 CS 233 or 340 | 3 |
| CHEM 104 | 3 | 3 ANSC 223 | 3 |

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|----------|----------------------------------|-----------|
| CHEM 105 | 1 ANSC 224 | 4 |
| ANSC 221 | 3 Applied Animal Sciences course | 3 |
| ANSC 222 | 3 | |
| ANSC 398 | 1 | |
| | 16 | 17 |

Third Year

| First Semester | Hours Second Semester | Hours |
|--------------------------------|----------------------------------|-----------|
| MATH 225 or 257 | 2 CS 361 | 3 |
| Basic Animal Sciences course | 3 CS 374 | 4 |
| Applied Animal Sciences course | 3 Free Elective Course or CS 4XX | 4 |
| General Education course | 3 ECON 102 or ACE 100 | 3 |
| CS 341 (or CS 4XX) | 4 General Education course | 3 |
| | 15 | 17 |

Fourth Year

| First Semester | Hours Second Semester | Hours |
|--------------------------------|--------------------------------|-----------|
| CS 357 or 421 | 3 ANSC 498 | 2 |
| Basic Animal Sciences course | 3 Basic Animal Sciences course | 3 |
| Applied Animal Sciences course | 3 General Education course | 3 |
| General Education course | 3 General Education course | 3 |
| General Education course | 3 General Education course | 3 |
| | 15 | 14 |

Total Hours 126

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Please see the Computer Science advisor in 1210 Siebel Center, as well as the Animal Sciences Undergraduate Curriculum Coordinator, Dr. David Miller, 116 Animal Sciences Lab.

Animal Sciences

Animal Sciences website (<https://ansc.illinois.edu/>)

Animal Sciences Laboratory
1207 West Gregory Drive
Urbana, IL 61801
217-333-3131
ansc@illinois.edu

College of Agricultural, Consumer & Environmental Sciences

College of Agricultural, Consumer & Environmental Sciences website (<https://aces.illinois.edu/>)

ACES Office of Academic Programs

128 Mumford Hall
1301 West Gregory Drive
Urbana, IL 61801
217-333-3380
aces-academics@illinois.edu

Advising

Advising website (<https://ansc.illinois.edu/about/contact-us/#paragraph-499>)
217-333-3570
anscadvising@illinois.edu

Admissions

ACES Undergraduate Admissions (<https://aces.illinois.edu/admissions/>)
University of Illinois Undergrad Admissions (<https://www.admissions.illinois.edu/>)
217-333-3380
visitACES@illinois.edu

Computer Science

Computer Science degree information (<https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements>)
CS + Crop Science website (<https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/computer-science-crop-sciences/>)
Computer Science website (<https://cs.illinois.edu/>)
Computer Science faculty (<https://cs.illinois.edu/about/people/all-faculty/>)
undergrad@cs.illinois.edu

The Grainger College of Engineering (<https://grainger.illinois.edu/>)
The Grainger College of Engineering Admissions (<https://grainger.illinois.edu/admissions/>)