

INSECT SCIENCE

Description

Website: https://entomology.unl.edu/insect_science

The field of insect science encompasses the agricultural, biological, and environmental sciences related to insects and their interactions with humans. Insects and their relatives are the most abundant animals on earth, are commonly found in all habitats, and are essential in maintaining our ecosystem. Insect science offers numerous career opportunities in both basic and applied fields.

The core curriculum provides students with a balanced education focusing on insect identification, biology, structure and function, behavior, ecology, and diversity, as well as courses in mathematics, science, and the humanities. In addition to the core, there are two options from which students can select an area of focus which meets their own interest and career objectives.

College Requirements

College Admission

Requirements for admission into the College of Agricultural Sciences and Natural Resources (CASNR) are consistent with general University admission requirements (one unit equals one high school year): 4 units of English, 4 units of mathematics, 3 units of natural sciences, 3 units of social studies, and 2 units of foreign language. Students must also meet performance requirements (ACT composite of 20 or higher OR combined SAT score of 950 or higher OR rank in the top one-half of graduating class; transfer students must have a 2.0 (on a 4.0 scale) cumulative grade point average and 2.0 on the most recent term of attendance. For students entering the PGA Golf Management degree program, a certified golf handicap of 12 or better (e.g., USGA handicap card) or written ability (MS Word file) equivalent to a 12 or better handicap by a PGA professional or high school golf coach is required. For more information, please visit: <http://pgm.unl.edu/requirements>.

Admission Deficiencies/Removal of Deficiencies

Students who are admitted to CASNR with core course deficiencies must remove these deficiencies within the first 30 credit hours at the University of Nebraska–Lincoln, or within the first calendar year at Nebraska, whichever takes longer, excluding foreign languages. Students have up to 60 credit hours to remove foreign language deficiencies. College-level coursework taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by completion of specified courses in the University or by correspondence.

The Office of Admissions, Alexander Building (south entrance), City Campus, provides information to new students on how deficiencies can be removed.

College Degree Requirements

Curriculum Requirements

The curriculum requirements of the College consist of three areas: ACE (Achievement-Centered Education); College of Agricultural Sciences and Natural Resources Core; and Degree Program requirements and electives. All three areas of the College Curriculum Requirements are incorporated within the description of the Major/Degree Program sections of the catalog. The individual major/degree program listings of classes insures

that a student will meet the minimum curriculum requirements of the College.

Foreign Languages/Language Requirement

Two units of a foreign language are required. This requirement is usually met with two years of high school language.

Minimum Hours Required for Graduation

The College grants the bachelors degree in programs associated with agricultural sciences, natural resources and related programs. Students working toward a degree must earn at least 120 semester hours of credit. A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Grade Rules

Removal of C-, D and F Grades

Only the most recent letter grade received in a given course will be used in computing a student's cumulative grade point average if the student has completed the course more than once and previously received a grade or grades below C in that course.

The previous grade (or grades) will not be used in the computation of the cumulative grade point average, but it will remain a part of the academic record and will appear on any transcript.

A student can remove from his/her cumulative average a course grade of C-, D+, D, D- or F if the student repeats the same course at the University of Nebraska and receives a grade other than P (pass), I (incomplete), N (no pass), W (withdrew), or NR (no report). If a course is no longer being offered, it is not eligible for the revised grade point average computation process.

For complete procedures and regulations, see the Office of the University Registrar website at <http://www.unl.edu/regrec/course-repeats>.

Pass/No Pass

Students in CASNR may take any course offered on a Pass/No Pass basis within the 24-hour limitation established by the Faculty Senate. However, a department may specify that the Pass/No Pass status of its courses be limited to non-majors or may choose to offer some courses for letter grades only.

GPA Requirements

A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation. Some degree programs have a higher cumulative grade point average required for graduation. Please check the degree program on its graduation cumulative grade point average.

Transfer Credit Rules

To be considered for admission, a transfer student, Nebraska resident or nonresident, must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who have completed less than 12 credit hours of college study must submit either ACT or SAT scores.

Ordinarily, credits earned at an accredited college are accepted by the University. The College, however, will evaluate all hours submitted on an application for transfer and reserves the right to accept or reject any of them. Sixty (60) is the maximum number of hours the University

will accept on transfer from a two-year college. Ninety (90) is the maximum number of hours the University will accept from a four-year college. Transfer credit in the degree program must be approved by the degree program advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major. At least 9 hours in the major field, including the capstone course, must be completed at the University of Nebraska–Lincoln regardless of the number of hours transferred.

The College will accept no more than 10 semester hours of C-, D+, D and D- grades from other schools. The C-, D+, D and D- grades can only be applied to free electives. This policy does not apply to the transfer of grades from UNO or UNK to the University of Nebraska–Lincoln.

Joint Academic Transfer Programs

The College of Agricultural Sciences and Natural Resources has agreements with many institutions to support joint academic programs. The transfer programs include dual degree programs and cooperative degree programs. Dual degree programs offer students the opportunity to receive a degree from a participating institution and also to complete requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either the University of Nebraska–Lincoln or the cooperating institution.

Dual Degree Programs

A to B Programs

The A to B Program, a joint academic program offered by the CASNR and participating community colleges, allows students to complete the first two years of a degree program at the participating community college and continue their education and study in a degree program leading toward a bachelor of science degree.

The A to B Program provides a basic knowledge plus specialized coursework. Students transfer into CASNR with junior standing.

Depending on the community college, students enrolled in the A to B Program may complete the requirements for an associate of science at the community college, transfer to the University of Nebraska–Lincoln, and work toward a bachelor of science degree.

Participating community colleges include:

- Central Community College
- Metropolitan Community College
- Mid-Plains Community College
- Nebraska College of Technical Agriculture
- Northeast Community College
- Southeast Community College
- Western Nebraska Community College

3+2 Programs

Two specialized degree programs in **animal science** and **veterinary science** are offered jointly with an accredited college or school of veterinary medicine. These two programs permit CASNR animal science or veterinary science students to receive a bachelor of science degree from the University of Nebraska–Lincoln with a degree in animal science or veterinary science after successfully completing two years of the professional curriculum in veterinary medicine at an accredited veterinary school. Students who successfully complete the 3+2 Program, must complete the Application for Degree form and provide transcripts to the Credentials Clerk, Office of the University Registrar, 107 Canfield

Administration Building. Students should discuss these degree programs with their academic advisor.

Cooperative Degree Programs

Academic credit from the University and a cooperating institution is applied towards a four-year degree from either the University of Nebraska–Lincoln (University degree-granting program) or the cooperating institution (non University degree-granting program). All have approved programs of study.

UNL Degree-Granting Programs

A University of Nebraska–Lincoln degree-granting program is designed to provide students the opportunity to complete a two-year program of study at one of the four-year institutions listed below, transfer to CASNR and complete the requirements for a bachelor of science degree.

Chadron State College. Chadron State College offers a 2+2 program leading to a grassland ecology and management degree program and a transfer program leading to a bachelor of science in agricultural education in the teaching option.

Wayne State College. Wayne State College offers a 3+1 program leading to a bachelor of science in plant biology in the ecology and management option.

University of Nebraska at Kearney. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

University of Nebraska at Omaha. The University of Nebraska at Omaha (UNO) cooperates with CASNR in providing four-semester pre-agricultural sciences, pre-natural resources, pre-food science and technology, pre-horticulture and pre-turfgrass and landscape management transfer programs.

A student enrolled in these programs may transfer all satisfactorily completed academic credits identified in the suggested program of study, and enter CASNR to study toward a degree program leading to a bachelor of science degree. The total program would require a minimum of four years or eight semesters (16 credit hours/semester or 120 credit hours).

Nebraska CASNR faculty teach horticulture and food science and technology courses at UNO to assist an urban population in better understanding the food processing, horticulture, and landscape horticulture industries.

For more information, contact the CASNR Dean's Office, 800-472-8800, ext. 2541.

Non University of Nebraska–Lincoln Degree-Granting Programs

CASNR cooperates with other institutions to provide coursework that is applied towards a degree at the cooperating institution. Pre-professional programs offered by CASNR allow students to complete the first two or three years of a degree program at the University prior to transferring and completing a degree at the cooperating institution.

Chadron State College–Range Science. The 3+1 Program in range science allows Chadron State College students to pursue a range science degree through Chadron State College. Students complete three years of coursework at Chadron State College and one year of specialized range science coursework (32 credit hours) at CASNR.

Dordt College (Iowa)–Agricultural Education: Teaching Option. This program allows students to pursue an Agricultural Education Teaching Option degree leading toward a bachelor of science in agricultural

education. Students at Dordt College will complete 90 credit hours in the Agricultural Education: Teaching Option Transfer Program.

Residency

Students must complete at least 30 of the total hours for their degree using University of Nebraska–Lincoln credits. At least 18 of the 30 credit hours must be in courses offered through CASNR¹ (>299) including the appropriate ACE 10 degree requirement or an approved ACE 10 substitution offered through another Nebraska college and excluding independent study regardless of the number of hours transferred. Credit earned during education abroad may be used toward the residency requirement if students register through UNL and participate in prior-approved education abroad programs. University of Nebraska–Lincoln open enrollment and summer independent study courses count toward residence.

¹ *Includes courses taught by CASNR faculty through interdisciplinary prefixes (e.g., LIFE, MBIO, ENVR, SCIL, EAEP, HRTM, ENSC) and CASNR crosslisted courses taught by non-CASNR faculty.*

Online and Distance Education

There are many opportunities to earn college credit online through the University of Nebraska–Lincoln. Some of these credits may be applicable not only as elective credits, but also toward the fulfillment of the College's education requirements. Credits earned online may count toward residency. However, certain offerings may not be counted toward scholarship requirements or academic recognition criteria.

For further information, contact:

Office of Online and Distance Education
University of Nebraska–Lincoln
305 Brace Labs
Lincoln, NE 68588-0109
402-472-4681
<http://online.unl.edu/>

Independent Study Rules

Students wishing to take part in independent studies must obtain permission; complete and sign a contract form; and furnish copies of the contract to the instructor, advisor, departmental office, and the Dean's Office. The contract should be completed before registration. Forms are available in 103 Agricultural Hall or online at the CASNR website.

Independent study projects include research, literature review or extension of coursework under supervision and evaluation of a departmental faculty member.

Students may only count 12 hours of independent study toward their degrees and no more than 6 hours can be counted during their last 36 hours earned, excluding senior thesis, internships, and courses taught under an independent study number.

Other College Degree Requirements

Capstone Course Requirement

A capstone course is required for each CASNR degree program. A capstone course is defined as a course in which students are required to integrate diverse bodies of knowledge to solve a problem or formulate a policy of societal importance.

ACE Requirements

All students must fulfill the Achievement Centered Education (ACE) requirements. Information about the ACE program may be viewed at ace.unl.edu (<https://ace.unl.edu>).

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6 and 10 with the college requirements.

Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to the University of Nebraska–Lincoln or when they were first admitted to a Joint Academic Transfer Program. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at Nebraska in the College of Agricultural Sciences and Natural Resources. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Learning Outcomes

Graduates of insect science will be able to:

1. Demonstrate a broad range of knowledge and understanding of insect biology, physiology, classification, ecology and behavior, and insect pest management.
2. Apply content knowledge to solve problems, both theoretical and practical.
3. Communicate through writings and oral presentations, complex ideas and develop sound arguments based on technical knowledge.
4. Conduct original research that includes developing a hypothesis, designing appropriate experiments, collecting and analyzing data, interpreting results, and drawing conclusions.

Major Requirements

Core Requirements

The following basic courses are required for majors in insect science. In addition, students must select and meet the requirements of one of the options, depending on their own individual interests and career objectives.

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6 and 10 with the college requirements.

College Integrative Course

SCIL 101	Science and Decision-Making for a Complex World	3
ENTO 485	Current Issues in Entomology (ACE 10)	3
Credit Hours Subtotal:		6

Departmental Requirements

ENTO 115 / BIOS 115	Insect Biology	3
ENTO 116 / BIOS 116	Insect Identification	1

ENTO 400	Biology and Classification of Insects	4
Credit Hours Subtotal:		8
Experiential Learning for Career Development in Insect Science		
Select 5 hours from the following four categories: ¹		5
ENTO 309	Career Experience	
ENTO 395A	Experiential Learning for Career Development in Insect Science Research Experience (Arranged through advisor)	
ENTO 395B	Experiential Learning for Career Development in Insect Science Teaching Experience (Arranged through advisor)	
ENTO 395C	Experiential Learning for Career Development in Insect Science Extension Experience	
Credit Hours Subtotal:		5
Mathematics and Statistics (beyond college algebra) (ACE 3)		
Select 5 hours of the following: ²		5
MATH 102	Trigonometry	
MATH 103	College Algebra and Trigonometry	
MATH 104	Applied Calculus	
MATH 106	Calculus I	
STAT 218	Introduction to Statistics	
Credit Hours Subtotal:		5
Communication		
<i>Written Communication (ACE 1)</i>		
Select one of the following:		3
ENGL 150	Writing and Inquiry	
ENGL 151	Writing and Argument	
ENGL 254	Writing and Communities	
JGEN 120	Basic Business Communication	
JGEN 200	Technical Communication I	
<i>Communications and Interpersonal Skills (ACE 2)</i>		
Select one of the following:		3
ALEC 102	Interpersonal Skills for Leadership	
COMM 109	Fundamentals of Human Communication	
COMM 209	Public Speaking	
COMM 286	Business and Professional Communication	
JGEN 300	Technical Communication II	
Credit Hours Subtotal:		6
Natural Sciences		
<i>CASNR Approved Life Sciences (ACE 4)</i>		
CHEM 109	General Chemistry I	4
BIOS 206	General Genetics	4
or AGRO 215	Genetics	
Select one sequence of the following:		4
BIOS 101 & BIOS 101L	General Biology and General Biology Laboratory	
LIFE 120 & LIFE 120L	Fundamentals of Biology I and Fundamentals of Biology I laboratory	
Credit Hours Subtotal:		12
Economics, Humanities and Social Sciences		
Select one of the following:		3
ECON 211	Principles of Macroeconomics	

ECON 212	Principles of Microeconomics	
AECN 141	Introduction to the Economics of Agriculture (ACE 6)	
Select one course each from ACE outcomes 5, 7, 8, and 9		12
Credit Hours Subtotal:		15
Option Requirements		
Complete requirements		42-44
Credit Hours Subtotal:		42
Free Electives		
Select 19-21 hours		19-21
Credit Hours Subtotal:		21
Total Credit Hours		120

¹ *Maximum of 3 hours from any one category.*

² *Proficiency at the college algebra level must be demonstrated either by a placement exam or through coursework. If MATH 103 is taken, only 2 cr hrs can be counted toward this requirement.*

IPM and Pest Science Option

The IPM and Pest Science Option is designed for students considering careers in agriculture, agribusiness, consulting (agricultural, environmental, public health, urban), extension, state and federal government agencies (e.g., APHIS, EPA, USDA, and state departments of agriculture), horticulture, the military, food processing, and pest control. Examples of areas of focus include agronomic and horticultural pests, or urban pests. This option is also suitable as preparation for graduate studies leading to academic or research careers in applied entomology.

Departmental Courses

ENTO 300 / BIOS 300 / NRES 300	Toxins in the Environment	3
ENTO 401	Insect Physiology	3
ENTO 406 / BIOS 406	Insect Ecology	3
ENTO 412	Entomology and Pest Management	3
Select three of the following:		8-9
ENTO 109	Beekeeping	
ENTO 403	Management of Horticultural Crop Insects	
ENTO 308	Management of Field Crop Insects	
ENTO 409	Insect Control by Host-Plant Resistance	
ENTO 415	Medical Entomology	
Credit Hours Subtotal:		20-21

Other Courses

AGRI 115	Biotechnology: Food, Health and Environment	3
AGRO 153 / HORT 153 / SOIL 153	Soil Resources	4
AGRO 426 / HORT 426 / NRES 426	Invasive Plants	3
NRES 211	Introduction to Conservation Biology	3
NRES 220 & NRES 222	Principles of Ecology and Ecology Laboratory	4

PLPT 270 / AGRO 270 / HORT 270 / NRES 270	Biological Invaders	3
PLPT 369 / BIOS 369	Introductory Plant Pathology	3
Credit Hours Subtotal:		23
Total Credit Hours		43-44

Insect Science Option

The Insect Science Option is designed for students interested in careers focusing on the basic biology of insects and other arthropods. This option is suitable for students considering any career involving entomology (e.g., academia, research, medicine, forensics, environmental quality, conservation biology, or health-related fields), but is especially appropriate preparation for entry into professional programs such as veterinary and medical schools and with many graduate school disciplines. Students pursuing this option must choose LIFE 120 Fundamentals of Biology I & LIFE 120L Fundamentals of Biology I laboratory and BIOS 206 General Genetics in meeting the entomology degree requirements in life sciences. Completion of the Insect Science Option will also fulfill requirements for a minor in biological sciences.

Departmental Courses

ENTO 401	Insect Physiology	3
ENTO 406 / BIOS 406	Insect Ecology	3
Select 6 hours from any ENTO course beyond those meeting other major requirements		6
Credit Hours Subtotal:		12

Other Courses

AGRI 115	Biotechnology: Food, Health and Environment	3
LIFE 121 & LIFE 121L	Fundamentals of Biology II and Fundamentals of Biology II Laboratory	4
BIOS 205	Genetics, Molecular and Cellular Biology Laboratory	2
BIOS 207	Ecology and Evolution	4
Select 2 hours from any BIOS/LIFE course beyond those meeting other major requirements		2
BIOC 401 & BIOC 401L	Elements of Biochemistry and Laboratory for Elements of Biochemistry	4
CHEM 110	General Chemistry II	4
CHEM 251	Organic Chemistry I	3
PHYS 141 or PHYS 151	Elementary General Physics I Elements of Physics	4-5
Credit Hours Subtotal:		30-31
Total Credit Hours		42-43

Students interested in graduate or professional schools in biology, medicine, or veterinary science should take:

MATH 106	Calculus I	5
An additional PHYS course and lab		5

Requirements for Minor Offered by Department

Insect Science Minor

A minor in insect science will consist of at least 18 credit hours of entomology including at least 6 hours at the 300 level or above. BIOS 381 Invertebrate Zoology, and up to 3 hours of ENTO 496 Independent Study in Entomology, may be counted towards the minor requirements. The course of study leading to a minor in insect science must be developed in consultation with, and be approved by, an advisor in the Department of Entomology. Advisors for the minor are assigned by the Head of the Department of Entomology.

ENTO 109 Beekeeping

Description: Life history and habits of the honeybee; methods of management; honey and wax production; apiary equipment; pollination; identity and control of bee diseases.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Format: LEC

ENTO 115 Insect Biology

Crosslisted with: BIOS 115

Description: Fundamental insect biology (anatomy, development, physiology, behavior, ecology and diversity). Economic and medical importance of insects and principles of insect pest management.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

Prerequisite for: ENTO 200; ENTO 400

ACE: ACE 4 Science

ENTO 116 Insect Identification

Crosslisted with: BIOS 116

Description: Identification of representative orders and families of insects by their anatomy, metamorphosis, habits and habitats. Sight recognition emphasized but dichotomous keys also used. Interrelation of insect and habitats stressed.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Format: LAB

ENTO 200 Behavior of Arthropods

Prerequisites: ENTO 115 or equivalent introductory course

Description: An in-depth look at how arthropods find and defend their resources, how they avoid predators, how they find mates, how they mate, and how some exist in highly ordered social settings.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

ENTO 300 Toxins in the Environment**Crosslisted with:** BIOS 300, NRES 300**Prerequisites:** One semester BIOS and one semester CHEM**Description:** Introduction to the principles of toxicology as they apply to environmental contaminants, agri-chemicals, and industrial and naturally occurring chemicals.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 308 Management of Field Crop Insects****Prerequisites:** BIOS 101 and 101L**Notes:** ENTO 115 recommended**Description:** Injurious and beneficial insects and pest management practices associated with field crop insects and mites.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 309 Career Experience****Prerequisites:** Junior standing; introductory courses in entomology; and permission prior to enrolling**Notes:** Course must be concluded with preparation of a written report. P/N only.**Description:** Career experience in applied practices is provided via employment with an entomology-related agency, business or industry, research, extension, or teaching activity.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 4**Format:** LEC**ENTO 315 Undergraduate Research Seminar****Description:** A comprehensive introduction to research is covered in this course designed for, but not limited to, insect science majors preparing for their capstone experience. Students learn about the scientific method, methodologies used to conduct research (including utilizing the library for literature searches), and the process of scientific writing and presentation.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Format:** LEC**ENTO 395 Experiential Learning for Career Development in Insect Science****Prerequisites:** Sophomore standing.**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 5**Format:** FLD**ENTO 395A Experiential Learning for Career Development in Insect Science Research Experience****Prerequisites:** Sophomore standing.**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 5**Format:** FLD**ENTO 395B Experiential Learning for Career Development in Insect Science Teaching Experience****Prerequisites:** Sophomore standing.**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 5**Format:** FLD**ENTO 395C Experiential Learning for Career Development in Insect Science Extension Experience****Prerequisites:** Sophomore standing.**Notes:** A faculty adviser for the area of interest must be identified prior to registering for the course.**Description:** Application and integration of the Insect Science curriculum within the context of extension and service, research, or teaching experience.**Credit Hours:** 1-5**Min credits per semester:** 1**Max credits per semester:** 5**Max credits per degree:** 5**Format:** FLD**ENTO 400 Biology and Classification of Insects****Prerequisites:** ENTO 115 or equivalent introductory course.**Description:** Survey of orders and common families of insects with emphasis on biology, ecology, and phylogeny. Sight recognition of major orders and families, identification of other families with keys. Insect collection required.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Format:** LEC

ENTO 401 Insect Physiology**Crosslisted with:** ENTO 801**Prerequisites:** CHEM 251 or CHEM 255; 12 hrs entomology or biological sciences (zoology)**Description:** Functions and other phenomena associated with the major organ systems of insects; the cuticle, nervous, circulatory, digestive, metabolism, nutrition, locomotion, reproduction, respiration, and growth and development.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 402 Aquatic Insects****Crosslisted with:** BIOS 485, BIOS 885, ENTO 802, NRES 402, NRES 802**Prerequisites:** 12 hrs biological sciences**Description:** Biology and ecology of aquatic insects.**Credit Hours:** 2**Max credits per semester:** 2**Max credits per degree:** 2**Format:** LEC**Prerequisite for:** BIOS 485L, BIOS 885L, ENTO 402L, ENTO 802L, NRES 402L, NRES 802L**ENTO 402L Identification of Aquatic Insects****Crosslisted with:** BIOS 485L, BIOS 885L, ENTO 802L, NRES 402L, NRES 802L**Prerequisites:** Parallel ENTO 802, NRES 402/802, BIOS 485/885.**Description:** Identification of aquatic insects to the family level.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Format:** LAB**ENTO 403 Management of Horticultural Crop Insects****Crosslisted with:** ENTO 803**Prerequisites:** Introductory biology course.**Description:** The biology, ecology and management of insect pests of horticultural crops such as vegetables, fruit trees, trees and shrubs, greenhouse crops, turf and ornamentals. Employing Integrated Pest Management (IPM) strategies to maintain pests below damaging levels while minimizing the use of traditional insecticides.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 406 Insect Ecology****Crosslisted with:** BIOS 406, BIOS 806, ENTO 806**Prerequisites:** BIOS/NRES 220 and 222.**Description:** Biotic and abiotic factors as they influence insect development, behavior, distribution, and abundance.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 409 Insect Control by Host-Plant Resistance****Crosslisted with:** ENTO 809**Prerequisites:** 12 hrs agricultural sciences and/or biological sciences including one course in entomology and one course in genetics.**Description:** Explore resistance of crops to herbivorous arthropods. Investigate how insect behavior and physiology are affected by resistance, critically review current research on plant resistance genes, and the molecular, biochemical and physiological aspects of insect/microbe interactions with host plants.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 412 Entomology and Pest Management****Crosslisted with:** ENTO 812**Prerequisites:** Introductory course in ENTO.**Description:** Principles and practices of managing insect pests. Pest management theory, use of sampling, evaluation, tactics, types of insect pests, and current issues.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 414 Forensic Entomology****Crosslisted with:** ENTO 814, FORS 414, FORS 814**Prerequisites:** ENTO 115 or equivalent introductory course.**Description:** Application of entomology to legal issues. Criminal investigations, insects of forensic importance, insect succession on carrion, and case studies.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 415 Medical Entomology****Crosslisted with:** ENTO 815**Prerequisites:** Introductory course in ENTO.**Description:** Direct and indirect importance of insects in human medicine. Principles of arthropod-borne disease, medically important arthropod groups, and arthropod-transmitted diseases.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ENTO 416 Forensic Insect Succession****Crosslisted with:** ENTO 816**Description:** Forensic insect succession and specific forensically important insects including their life cycle, biology, and association with decomposition. Case studies about how forensic entomology has been used in solving crimes will also be covered.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Format:** LEC**Offered:** SPRING

ENTO 482 Field Entomology**Crosslisted with:** BIOS 482, BIOS 882, ENTO 882**Prerequisites:** 12 hrs biological sciences.**Notes:** Offered only at Cedar Point Biological Station.**Description:** Field course in insect taxonomy and biology emphasizing field collection, specimen preparation, classification, and insect natural history.**Credit Hours:** 4**Max credits per semester:** 4**Max credits per degree:** 4**Format:** LEC**Offered:** SUMMER**ENTO 485 Current Issues in Entomology****Prerequisites:** Senior standing; completion of ENTO core requirements.**Notes:** Capstone course. Fulfills the capstone requirement for the insect science major.**Description:** The application and integration of biological principles of the insect science program.**Credit Hours:** 3**Max credits per semester:** 3**Max credits per degree:** 3**Format:** LEC**ACE:** ACE 10 Integrated Product**ENTO 495 Grasslands Seminar****Crosslisted with:** AGRO 495, GRAS 495, HORT 495, NRES 495, RNGE 495, SOIL 495**Prerequisites:** Junior standing.**Description:** Topic varies and deals with different aspects of forage and/or range and/or livestock, turf and/or landscape grasses, natural habitats, and wetlands.**Credit Hours:** 1-2**Min credits per semester:** 1**Max credits per semester:** 2**Max credits per degree:** 4**Format:** LEC**ENTO 496 Independent Study in Entomology****Crosslisted with:** ENTO 896**Prerequisites:** 12 hrs biological sciences and/or agricultural sciences.**Notes:** Independent study contracts must be filed with the department.**Description:** Individual or group projects in research, literature review, or extension of course work.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 12**Format:** IND**ENTO 499H Honors Thesis****Prerequisites:** Admission to the University Honors Program and permission, AGRI 299H recommended.**Description:** Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.**Credit Hours:** 3-6**Min credits per semester:** 3**Max credits per semester:** 6**Max credits per degree:** 6**Format:** IND

PLEASE NOTE

This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your college or department

academic advisor. Advisors also can help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and community-based learning.

Insect Science - IPM & Pest Science

Insect Science - Science

Career Information

The following represents a sample of the internships, jobs and graduate school programs that current students and recent graduates have reported.

Jobs of Recent Graduates

- Ph. D. Graduate Assistant, University of Arkansas - Fayetteville AR
- Biological Science Aid, USDA - Lincoln NE
- RCOI & Regional Coordinator at Ord Learning Center, Central Community College - Columbus NE
- Parent Characterization Scientist, Syngenta - Seward NE
- Queen Bee Rearing Specialist, Olivarez Honey Bees - Kona HI
- Insect Zoo Coordinator, Iowa State University - Ames IA
- Medical Officer, United States Navy - Jacksonville FL
- Assistant Manager, Earl May - Lincoln NE
- Sales Agronomist, Aurora Coop - Grand Island NE

Internships

- entomology intern, Disney World - Epcott Center - Orlando FL
- Discovery group intern, Pioneer - York NE
- extension intern, 4-H, FFA, Fillmore County Extension - Geneva NE
- IPM in hops, Perrault Farms - OR
- Plant breeding intern, Dow Chemical - York NE
- IPM scout in seed corn, Pioneer - York NE

Graduate & Professional Schools

- Entomology, University of Arkansas - Fayetteville AR
- Plant Pathology/Entomology, Auburn University - Auburn AL
- Entomology, Washington State University - Pullman WA
- Masters of Science, University of Georgia - Athens GA
- , Palmer College of Chiropractic - Davenport IA
- Masters of Entomology, University of Nebraska-Lincoln - Lincoln NE
- MS Entomology, University of Nebraska-Lincoln - Lincoln NE
- PhD, University of Nebraska-Lincoln - Lincoln NE
- Horticulture, University of Nebraska Lincoln - Lincoln NE
- Entomology Masters, University of Nebraska-Lincoln - Lincoln NE
- , Colorado State University - Fort Collins CO