In the Department of Agricultural Biology we study plants, microbes, and insects in order to describe their roles in agricultural and natural ecosystems. We are motivated by new discoveries and we share this knowledge with others so that we can all work together to improve ecosystem health and sustainability.

Office in Plant Sciences Building, Room C129
(970) 491-5261
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Professor Amy Charkowski, Head
Giovanni Tolentino Ramos, Graduate Coordinator
Chris Amerman, Undergraduate Academic Success Coordinator

Undergraduate Majors

- Agricultural Biology
- Entomology Concentration
- Plant Pathology Concentration
- Weed Science Concentration

Minors

Minors are offered in Entomology and Plant Health. Students are provided with maximum breadth and depth with a limited number of required courses. The minors also serve to broaden the academic background of students seeking employment in the interdisciplinary job markets associated with most Plant Science majors. The minors also pair well with Natural Resources majors. The minors provide adequate credits to meet most federal and state certification requirements for employment. Please contact Dr. Punya Nachappa and Chris Amerman for information on the Entomology minor. Please contact Dr. Jane Stewart and Chris Amerman for information on the Plant Health minor.

- Entomology
- Plant Health

Advising

Reach out to Chris Amerman (Chris.Amerman@colostate.edu) to schedule an appointment to change your major/minor. The change of major form can be electronically submitted by a student’s main advisor to the Registrar's Office.

- Individualized Appointment with Advisor - Link for Scheduling
- Dr. Punya Nachappa
- Dr. Jane Stewart

Our majors and minors have no competitive entry requirements. Courses to take if you are interested in the programs include AB 111, BSPM 102, BSPM 302, BSPM 308, and BSPM 361. Students interested in our program should ideally declare in the first two years, but exceptions can be made depending on the student's previous coursework.

Learn more about the Agricultural Biology major on the Department of Agricultural Biology website.

Graduate Programs in Bioagricultural Sciences

The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees in Bioagricultural Sciences, with specializations available in Entomology, Pest Management, Plant Pathology, and Weed Science.

Research in the department is focused in four areas of emphasis that cut across disciplinary specializations:

1. genomics and molecular biology
2. ecology and biodiversity
3. biology and management of invasive species
4. integrated pest management

In addition, a number of faculty in the department are members of CSU’s Graduate Degree Program in Ecology or the Cell and Molecular Biology Program and advise M.S. and Ph.D. students through these programs. Students interested in graduate work should refer to the Graduate and Professional Bulletin or visit the Department of Agricultural Biology website.
Master’s Programs

- Master of Science in Bioagricultural Sciences (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/ms-bioagricultural-sciences/)
- Master of Science in Bioagricultural Sciences, Plan A, Entomology Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/ms-bioagricultural-sciences/entomology-specialization-plan-a/)
- Master of Science in Bioagricultural Sciences, Plan B, Pest Management Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/ms-bioagricultural-sciences/pest-management-specialization-plan-b/)
- Master of Science in Bioagricultural Sciences, Plan A, Weed Science Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/ms-bioagricultural-sciences/weed-science-specialization-plan-a/)

Ph.D.

- Ph.D. in Bioagricultural Sciences (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/bioagricultural-sciences-phd/)
- Ph.D. in Bioagricultural Sciences, Entomology Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/bioagricultural-sciences-phd/entomology-specialization/)
- Ph.D. in Bioagricultural Sciences, Plant Pathology Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/bioagricultural-sciences-phd/plant-pathology-specialization/)
- Ph.D. in Bioagricultural Sciences, Weed Science Specialization (http://catalog.colostate.edu/general-catalog/colleges/agricultural-sciences/agricultural-biology/bioagricultural-sciences-phd/weed-science-specialization/)

Courses

Subjects in this department include: Agricultural Biology (AB) and Bioagricultural Sciences and Pest Management (BSPM)

Agricultural Biology (AB)

AB 111 Feeding the World in a Changing Climate (GT-SC2) Credits: 3 (3-0-0)

Course Description: Fundamental concepts of climate change and implications for agriculture and global food security.

Prerequisite: None.

Registration Information: Sections may be offered: Online.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

AB 120 Agricultural Biology—Freshman Orientation Credit: 1 (1-0-0)

Course Description: Introduction to information and skills necessary to succeed in the agricultural biology major.

Prerequisite: None.

Restriction: Must be a: Undergraduate.

Registration Information: This is a partial semester course.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

AB 130 Working with Agricultural Biology Data Credit: 1 (1-0-0)

Course Description: Introduction to the scientific method and systems thinking in terms of agricultural biology. Develop a hypothesis based on field observations, collect and analyze data to determine if findings align with the hypothesis. Results are communicated in a written report, and oral presentation.

Prerequisite: AB 120, may be taken concurrently.

Restriction: Must be a: Undergraduate.

Registration Information: This is a partial semester course.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.

AB 230 Becoming an Agricultural Biology Professional Credit: 1 (1-0-0)

Course Description: Design professional resumes, and develop interpersonal skills to succeed in a professional environment. Develop criteria to write a report from internships, and develop skills in interpretation of qualitative and quantitative agricultural biology data.

Prerequisite: AB 130.

Registration Information: Agricultural biology majors only. This is a partial semester course. Credit not allowed for both AB 230 and AB 270.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.

AB 270 Agri. Biology Orientation for Transfers Credits: 2 (2-0-0)

Course Description: Introduction to the scientific method and systems thinking in terms of agricultural biology. Develop a hypothesis based on field observations, collect and analyze data. Prepare to become agricultural biology professionals by designing resumes and practicing skills to succeed in a professional environment.

Prerequisite: None.

Registration Information: Agricultural biology majors only. Written consent of instructor. Credit not allowed for both AB 230 and AB 270.

Term Offered: Fall.

Grade Mode: Traditional.

Special Course Fee: No.

AB 330 Applications in Agricultural Biology I Credits: 2 (2-0-0)

Course Description: Knowledge, skills, and abilities to propose sustainable solutions to biological problems in natural or managed ecosystems. Collectively discuss a diverse set of case studies that incorporate systems approach in solving agricultural biology issues. Hone career plans and professional skills.

Prerequisite: (AB 230 or AB 270) and (BSPM 302).

Restriction: Must be a: Undergraduate.

Registration Information: Agricultural biology majors only.

Term Offered: Spring.

Grade Mode: Traditional.

Special Course Fee: No.
AB 340 Insect Biotechnology Credits: 3 (3-0-0)
Course Description: Introduction to concepts, terminology, and applications of molecular biology techniques as it relates to the entomology. Learn about the use of whole insects, as well as their cells, tissues, and associated bacteria in medical, pharmaceutical, and agricultural applications.
Prerequisite: LIFE 102.
Registration Information: Credit not allowed for both AB 340 and BSPM 280A1.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AB 410 Understanding Pesticides Credits: 3 (3-0-0)
Course Description: Explore the safe and effective use of pesticides, balancing improved pest management and production while minimizing harm to humans and the environment. Analyze pesticide labels to identify procedures for using the pesticide safely, effectively, and legally. Use objective sources of pesticide information to improve pesticide use decision making and to communicate effectively about the risks and benefits of pesticides.
Prerequisite: BZ 100 to 199 - at least 3 credits or CHEM 100 to 199 - at least 3 credits.
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Junior standing. Sections may be offered: Online. Credit allowed for only one of the following: AB 310, AB 410, or BSPM 310.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AB 430 Applications in Agricultural Biology II Credits: 3 (3-0-0)
Course Description: Apply systems thinking and dynamic systems modeling to case studies and a capstone project that poses sustainable solutions to biological problems in natural or managed ecosystems. Hone career plans and professional skills.
Prerequisite: AB 330.
Restriction: Must be a: Undergraduate.
Registration Information: Agricultural biology majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AB 451 Integrated Pest Management Credits: 3 (3-0-0)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AB 509 Herbicide Selectivity and Action Credits: 3 (3-0-0)
Course Description: Explores the physicochemical properties of herbicides, their selectivity (through placement and metabolism), their mechanism of action, uses in weed management, visual symptoms of herbicide treatment, how plants can evolve resistance to these compounds, and controversial topics related to the use of herbicides.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AB 511 Microbiome of Plant Systems Credits: 3 (3-0-0)
Course Description: Emphasizes interdisciplinary and cross curricular education with training in disciplines that support an increased understanding of plant associated microbiome and their optimization.
Prerequisite: None.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AB 515 Plant Biochemistry in Agriculture Credits: 3 (3-0-0)
Course Description: Experiential learning environment leading to mastery of principles of protein homology modeling, metabolic network analysis, and important plant biochemical pathways. Structure and function of enzymes in metabolic pathways and the contributions of these pathways to plant growth and development.
Prerequisite: HORT 576.
Restriction: Must be a: Graduate.
Registration Information: Graduate standing. Sections may be offered: Online. Credit allowed for only one of the following: AB 515, BSPM 515 or BSPM 581A2.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AB 521 Forest Health Issues Credits: 2 (2-0-0)
Course Description: Current topics related to forest and shade tree health from ecosystems to tree defense physiology.
Prerequisite: BZ 120.
Registration Information: This is a partial semester course. Credit not allowed for both AB 521 and BSPM 521.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AB 523 Advanced Evolution/Classification of Insects Credits: 5 (2-6-0)
Course Description: Identification of major insect groups. Explore field collecting, specimen preservation methods, biodiversity discovery and description, patterns and timeline of insect evolution, classification, and morphology.
Prerequisite: BSPM 302 or BSPM 424.
Restriction: Must not be a: Freshman, Sophomore, Junior.
Registration Information: Senior standing. Must register for lecture and laboratory. Required field trips. Credit not allowed for both AB 523 and BSPM 523.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

AB 529 Pesticide Resistance Evolution and Management Credits: 3 (3-0-0)
Course Description: Examines pesticide resistance, including principles of resistance evolution; resistance mechanisms in arthropods, weeds, and plant pathogens; management approaches; communication strategies; and new developments in technology for pest management, including RNAi and gene drive.
Prerequisite: (LIFE 102 or LIFE 103) and (BZ 346 or SOCR 330).
Registration Information: Sections may be offered: Online. Credit not allowed for both AB 529 and BSPM 580A4.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
AB 551 Advanced Integrated Pest Management Credits: 4 (3-0-1)
Course Description: Concepts of integrated pest management and the strategies and tactics employed in the practical application of these concepts.
Prerequisite: BSPM 302 or BSPM 308 or BSPM 361.
Registration Information: Must register for lecture and recitation. Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AB 554 Biology of Fungal Plant Pathogens Credits: 2 (2-0-0)
Course Description: Introduction to fungal biology, including ecology, physiology, genetics and diversity of fungal pathogens. Explore fungal lifecycles, modes and genetics of fungal mating and sources of genomic variation, and fungal pathogenesis.
Prerequisite: BSPM 361 or BSPM 365.
Restriction: Must not be a: Freshman, Sophomore, Junior.
Registration Information: Senior standing. This is a partial semester course. Credit not allowed for both AB 554 and AB 580A1.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AB 555 Topics in Plant Pathology--Plant Virology Credits: 2 (2-0-0)
Course Description: Learn about the molecular mechanisms behind plant virus transmission, replication, translation, and movement, as well as the drivers for emerging plant viral diseases and methods of biotechnological control. Features that make viruses unique from other plant pathogens are the focus. The differences and similarities between plant viruses and viruses that infect other hosts (e.g. mammals and microbes) are also highlighted.
Prerequisite: (BSPM 361 or MIP 250 or MIP 300 or MIP 303) and (BZ 350).
Restriction: Must not be a: Freshman, Sophomore.
Registration Information: Junior standing. This is a partial semester course. Credit not allowed for both AB 555 and AB 580A2.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

Bioagricultural Sciences and Pest Management (BSPM)

BSPM 102 Insects, Science, and Society (GT-SC2) Credits: 3 (3-0-0)
Course Description: How insects develop, behave, and affect human activity. What every student should know about the most diverse life form on Earth.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 102 and BSPM 356A.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Biological & Physical Sciences 3A, Natural & Physical Sciences w/o lab (GT-SC2).

BSPM 201 Weed Management and Control Credits: 3 (3-0-0)
Course Description: Basic overview of weeds and weed control.
Prerequisite: None.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 302 Applied and General Entomology Credits: 2 (2-0-0)
Course Description: Biology and management of insects.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 302 and BSPM 356A.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

BSPM 303A Entomology Laboratory: General Credits: 2 (0-4-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 303B Entomology Laboratory: Horticultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Registration Information: Credit not allowed for both BSPM 303B and BSPM 356A.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 303C Entomology Laboratory: Agricultural Credit: 1 (0-2-0)
Course Description: Biology and recognition of insects.
Prerequisite: BSPM 302, may be taken concurrently.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 308 Ecology and Management of Weeds Credits: 3 (2-3-0)
Course Description: Classification, characteristics; weed biology and ecology; control by cultural, mechanical, chemical, and biological means; successional management.
Prerequisite: (BZ 120 or LIFE 103) and (CHEM 107 or CHEM 111).
Registration Information: Must register for lecture and laboratory. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

BSPM 355A Horticulture Pathology: General Pathology Credit: 1 (1-0-0)
Course Description: A 5-week course consisting of General Plant Pathology; identification of the organisms that can cause plant diseases.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355A and BSPM 381A2.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355C Horticulture Pathology: Vegetable and Greenhouse Disease  Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSMP 302 or BSPM 356A, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticulture Pathology: Vegetable and Greenhouse Disease  Credit: 1 (1-0-0)
Course Description: Diseases in the Greenhouse and Vegetable crops, management and control.
Prerequisite: BSPM 355A.
Registration Information: Offered as an online course only. This is a partial semester course. Written consent of instructor.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSMP 302 or BSPM 356A, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSMP 302 or BSPM 356A, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356B Horticultural Entomology: Food Crops  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of fruits, vegetables and other garden grown food crops.
Prerequisite: BSPM 102 or BSMP 302 or BSPM 356A, may be taken concurrently.
Registration Information: This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356C Horticultural Entomology: Landscape Plants  Credit: 1 (1-0-0)
Course Description: Insect and mite pests of ornamentals (woody plants, flowers) and turfgrass and their management.
Prerequisite: BSPM 102 or BSPM 302 or BSPM 356A, may be taken concurrently.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 355B Hort Pathology: Turf and Ornamental Disease  Credit: 1 (1-0-0)
Course Description: Turf and ornamental plant diseases, their management and control.
Prerequisite: BSPM 355A.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 355B and BSPM 361.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 356A Horticultural Entomology Introduction  Credit: 1 (1-0-0)
Course Description: Basic biology, identification and management of insects and mites affecting horticultural crops.
Prerequisite: HORT 100 to 199 or LIFE 100 to 199.
Registration Information: Written consent of instructor. This is a partial semester course. Offered as an online course only. Credit not allowed for both BSPM 302 and BSPM 356A. Credit not allowed for both BSPM 303B and BSPM 356A.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 450 Molecular Plant-Microbe Interaction Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe/insect interactions, physiological and molecular aspects of plant defense, genomics approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or SOCR 330).
Registration Information: Credit not allowed for both BSPM 450 and BSPM 550.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 462 Parasitology and Vector Biology Credits: 5 (3-4-0)
Also Offered As: BZ 462 and MIP 462.
Course Description: Protozoa, helminths, and insects and related arthropods of medical importance; systematics, epidemiology, host damage and control.
Prerequisite: (BZ 110 or LIFE 103) and (BZ 212 or LIFE 206 or MIP 302).
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: BSPM 462, BZ 462, MIP 462.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 487 Internship Credits: Var[1-18] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 492 Seminar Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 495 Independent Study Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 496 Group Study Credits: Var[1-3] (0-0-0)
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 500 Foundations of Bioagricultural Sciences Credits: 2 (2-0-0)
Course Description: Introduction to graduate school covering managing time, advisor and research, plus a survey of topics encompassed by the department of BSPM.
Prerequisite: None.
Restriction: Must be a: Graduate.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502A Topics in Plant Pathology: Plant Viruses Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502B Topics in Plant Pathology: Plant Bacteriology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BIO 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits or BSPM 300 to 499 - at least 3 credits.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 502F Topics in Plant Pathology: Plant Disease Epidemiology Credit: 1 (1-0-0)
Course Description:
Prerequisite: BSPM 361.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 520 Advanced Systematics Credits: 3 (3-0-0)
Also Offered As: BZ 520.
Course Description: Theory and practice of modern systematics.
Prerequisite: BSPM 424 or BZ 424 or BZ 325.
Registration Information: Credit not allowed for both BSPM 520 and BZ 520.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 526 Evolutionary Ecology Credits: 3 (3-0-0)
Also Offered As: BZ 526.
Course Description: Adaptation to abiotic and biotic environments; how current ecological processes interact with evolutionary history.
Prerequisite: LIFE 320 or LIFE 220 or LAND 220.
Registration Information: Credit not allowed for both BSPM 526 and BZ 526.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 528 Invasive Plants/Weeds–Ecosystems to Molecules Credits: 3 (3-0-0)
Course Description: Contributions of disciplines of weed science and invasion ecology to understanding the biology, ecology and management of "problem plants."
Prerequisite: (LIFE 320 or LAND 220 or LIFE 220) and (BZ 120) and (LIFE 102 or LIFE 103).
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
BSPM 530  Scientific Writing  Credit: 1 (1-0-0)
Also Offered As: SOCR 530.
Course Description: Skills necessary to prepare complete scientific
journal articles including writing, editing, and literature searching and
assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both BSPM 530 and
SOCR 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 550  Molecular Plant-Microbe Interactions  Credits: 3 (3-0-0)
Course Description: Principles of plant-microbe interactions,
physiological and molecular aspects of plant defense, genomic
approaches to study plant defense.
Prerequisite: (BZ 100 to 499 - at least 3 credits) and (BZ 346 or
SOCR 330).
Registration Information: Credit not allowed for both BSPM 550 and
BSPM 450.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 555  Immature Insects  Credits: 3 (1-4-0)
Course Description: Characteristics of immature forms of orders and
families of insects emphasizing those important to man.
Prerequisite: BSPM 303A or BSPM 303B or BSPM 303C.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 575  Molecular and Genomic Evolution  Credits: 3 (3-0-0)
Also Offered As: BZ 575.
Course Description: Molecular, biological mechanisms of evolutionary
change: mutation; selection; gene expression/regulation; changes in
whole-genome architecture.
Prerequisite: BZ 220 and BZ 350.
Registration Information: Credit not allowed for both BSPM 575 and
BZ 575.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 576  Bioinformatics  Credits: 3 (3-0-0)
Also Offered As: MIP 576.
Course Description: Technical computing across platforms using
bioinformatics tools in molecular analysis.
Prerequisite: BC 463 or BZ 310 or BZ 350 or CM 501 or CS 155 or
ERHS 332 or MIP 275 or MIP 300 or MIP 450 or STAT 307 or ERHS 307.
Registration Information: Credit not allowed for both BSPM 576 and
MIP 576.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 584  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 587  Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 592  Seminar  Credits: Var[1-3] (0-0-0)
Course Description: Major questions and theory pertinent to
understanding current and relevant science topics.
Prerequisite: None.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 594  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 596  Group Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 698  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 699  Thesis  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 710  Techniques in Molecular Biology and Genetics  Credits:
3 (0-4-1)
Also Offered As: CM 710.
Course Description: Genetic manipulation of bacteria, bacteriophage, and
yeast including experiments in molecular cloning and gene expression.
Prerequisite: BC 463 or BZ 346 or BZ 350 or MIP 450 or SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for laboratory and recitation.
Credit not allowed for both BSPM 710 and CM 710.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BSPM 740  Plant Molecular Genetics  Credits: 3 (3-0-0)
Also Offered As:  SOCR 740.
Course Description: Advances in study of organization and function of nuclear and organellar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisite: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both BSPM 740 and SOCR 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BSPM 784  Supervised College Teaching  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 787  Internship  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 792  Seminar  Credits: Var[1-2] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 794  Independent Study  Credits: Var[1-3] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 798  Research  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BSPM 799  Dissertation  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.