INB - Integrative Biology

Integrative Biology: INB

Lower-Division Courses

INB 208L. Field Biology.

Explore the principles and applications of ecology, and some of the experimental and descriptive methods of ecological investigations, using field projects, laboratory exercises, field trips, and computer simulation exercises. One lecture hour and four laboratory hours a week for one semester. Biology 208L and Integrative Biology 208L may not both be counted. Prerequisite: Credit or registration for Biology 311D or 325H.

INB 119S, 219S, 319S, 419S, 519S, 619S, 719S, 819S, 919S. Topics in Integrative Biology.

This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office. Credit is recorded as assigned by the study abroad advisor in the Biology Instructional Office. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. Transfer credit is awarded for work in an affiliated studies program. May be repeated for credit when the topics vary.

Upper-Division Courses

INB 321G. Principles of Computational Biology.

Introduction to computational methods for the analysis of nucleic acid and protein sequences, with applications towards biological problems. Three lecture hours and two computer laboratory hours a week for one semester. Biology 321G and Integrative Biology 321G may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H; Statistics and Data Sciences 320E or 328M.

INB 321L. Aquatic Entomology.

Examine the taxonomy of aquatic insects, including the use of aquatic insects in biomonitoring. Two lecture hours and three laboratory hours a week for one semester. Only one of the following may be counted: Biology 321L, 370C (Topic: Applied Aquatic Entomology), Integrative Biology 321L. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 322. Structure, Physiology, and Reproduction of Seed Plants.

Explore the principles of structure and functioning of higher plants with special attention to the dynamics of growth and development and reproduction. Three lecture hours a week for one semester. Biology 322 and Integrative Biology 322 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-; Chemistry 302, 302C, or 302H; and concurrent registration in Integrative Biology 122L.

INB 122L. Structure, Physiology, and Reproduction of Seed Plants Laboratory.

Observe the structure and reproduction in seed plants and employ experimental techniques that demonstrate physiological processes, especially processes of growth and development. Two laboratory hours a week for one semester. Biology 122L and Integrative Biology 122L may not both be counted. Prerequisite: Concurrent enrollment in Integrative Biology 322; and the following with a grade of at least C-: Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Sciences 311.

INB 323. Mathematical Modeling for Biology.

Translate between qualitative hypotheses regarding biological processes and their more exact expression in the form of mathematical models. Analyze these models to determine predicted biological behavior under those hypotheses. Three lecture hours and two laboratory hours a week for one semester. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H and Mathematics 408C, 408S, or 408R.

INB 324. Survey of the Plant Kingdom.

Survey the groups of living and fossil plants, comparing organization and reproduction to understand major shifts in the evolution of plant life. Three lecture hours a week for one semester. Biology 324 and Integrative Biology 324 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-, and concurrent registration in Integrative Biology 124L.

INB 124L. Survey of the Plant Kingdom Laboratory.

Explore major plant groups emphasizing organization, reproduction, and evolution. Examine cultures, prepared and living material. Local field trips. Two laboratory hours a week for one semester. Biology 124L and Integrative Biology 124L may not both be counted. Prerequisite: Concurrent registration in Integrative Biology 324; and the following with a grade of at least C-: Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Sciences 311.

INB 129S, 229S, 329S, 429S, 529S, 629S, 729S, 829S, 929S. Topics in Integrative Biology.

This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office. Credit is recorded as assigned by the study abroad advisor in the Biology Instructional Office. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. Transfer credit is awarded for work in an affiliated studies program. May be repeated for credit when the topics vary.

INB 137, 237, 337, 437. Topics in Biology.

Examine recent developments and research methods in the biological sciences. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Biology 325 or 325H with a grade of at least C-; additional prerequisites vary with the topic.

INB 438L. Animal Communication.

Examine animal communication from a multidisciplinary perspective, with emphasis on quantitative analysis, sensory processing, and evolution of signals. Three lecture hours and three laboratory hours a week for one semester, with computer laboratory hours as required. Biology 438L and Integrative Biology 438L may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-, and Integrative Biology 359K (or Biology 359K) or 370 (or Biology 370) with a grade of at least C-.

INB 440L. Biology of Birds.

Examine the anatomy, physiology, classification, and ecology of birds Two lecture hours and three laboratory hours a week for one semester. Biology 340L and Integrative Biology 440L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Sciences 311.

INB 345E. Endocrinology.

Examine vertebrate endocrinology (primarily mammalian), with a focus on human pathophysiology. Three lecture hours and one discussion

hour a week for one semester. Only one of the following may be counted: Biology 337 (Topic: Endocrinology), 345E, Integrative Biology 345E. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 346. Human Biology.

Introduction to human evolution, genetics, sexuality, senescence, and population growth. Three lecture hours and one discussion hour a week for one semester. Only one of the following may be counted: Biology 301G, 309F, 346, or Integrative Biology 346. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 446L. Human Microscopic and Gross Anatomy.

Designed for students preparing for biomedical research and the health professions. Explore microscopic and gross anatomy of human tissues and organs, with an emphasis on structure function relationships. Examine the effects of disease and aging in addition to normal human anatomy. Three lecture hours and four laboratory hours a week for one semester. Integrative Biology 446L and Biology 446L may not both be counted. Prerequisite: The following courses with a grade of at least C-: Biology 325 or 325H; Chemistry 301; and Mathematics 408C, 408K, 408N, or 408R.

INB 448L. Invertebrate Biology.

Examine the diversity and evolution of multicellular invertebrate animals, with emphasis on common themes in animal body construction and function. Three lecture hours and three laboratory hours a week for one semester. Biology 448L and Integrative Biology 448L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 349P. Pandemic Science.

Examine the history, spread, mitigation, and forecasting of pandemics. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 337 (Topic: Pandemic Science), 349P, Integrative Biology 349P. Prerequisite: Biology 325 with a grade of at least C-.

INB 351. Economic Botany.

Analyze the origin of domesticated plant species, the role in nature of plant products, and the ways natural products have been altered through artificial selection. Three lecture hours a week for one semester. Biology 351 and Integrative Biology 351 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 352. Reproductive Biology of Flowering Plants.

Examine pollination biology, breeding systems, reproductive strategies, and fruit and seed dispersal from evolutionary and ecological vantage points. Three lecture hours a week for one semester. Biology 352 and Integrative Biology 352 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 353F. Field Entomology.

Discuss insects with emphasis on field study techniques, visual identification of species, collecting techniques, and curation in the field. The equivalent of three lecture hours week for one semester. Biology 353F and Integrative Biology 353F may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 453L. Entomology.

Examine the characteristics, importance, and biology of the major groups of insects. Two lecture hours and three laboratory hours a week for one semester, with additional fieldwork hours to be arranged Biology 453L and Integrative Biology 453L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 353S. Sleep Science.

Explore the basics of sleep science. Examine current research questions and novel approaches. Discuss the range of sleep disorders and their diagnoses. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 337 (Topic 7), 353S, Integrative Biology 353S. Prerequisite: For Neuroscience majors, Biology 325 or 325H and Neuroscience 335; for others, Biology 325 or 325H and Psychology 332.

INB 354L. Ichthyology.

Discuss an overview of the evolution, biology, and ecology of fishes, emphasizing freshwater fishes. Three lecture hours and three hours of laboratory or fieldwork a week for one semester, with field trips to be arranged. Biology 354L and Integrative Biology 354L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 455L. Vertebrate Natural History.

Examine phylogeny, taxonomy, life histories, habits, and distribution. Two lecture hours and three hours of laboratory or fieldwork a week for one semester, with field trips to be arranged. Biology 455L and Integrative Biology 455L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 456L. Limnology and Oceanography.

Introduction to the study of the interactions between aquatic organisms and their environments. Two lecture hours and six laboratory hours a week for one semester. Biology 456L and Integrative Biology 456L may not both be counted Prerequisite: Chemistry 302, 302C, or 302H; and the following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 359J. Behavioral Ecology.

Examine behavioral ecology, with detailed consideration of animal communication, altruism, sexual selection, and plant-animal interactions. Three lecture hours and one discussion hour a week for one semester. Biology 359J and Integrative Biology 359J may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-, and Integrative Biology 359K (or Biology 359K) or 370 (or Biology 370) with a grade of at least C-.

INB 359K. Principles of Animal Behavior.

Introduction to the study of animal behavior: descriptive analysis of behavior; physiological basis of behavior; development of behavior; adaptive significance and evolution of behavior; communication and social behavior. Three lecture hours and one discussion hour a week for one semester. Biology 359K and Integrative Biology 359K may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 359L. Animal Behavior Laboratory.

Explore the evolution of animal behavior through hands-on modules that emphasize a range of analytical approaches commonly used in modern evolutionary biology. Six laboratory hours a week for one semester. Biology 337 (Topic: Evol of Animal Behav Quant Lab) and Integrative Biology 359L may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 361T. Comparative Animal Physiology.

Examine the physiology of organ systems in animal phyla, with special emphasis on the neural and behavioral adaptations of organisms to their environment. Three lecture hours and one discussion hour a week for one semester. Only one of the following may be counted: Biology 361T, Integrative Biology 361T, Neuroscience 361T, 337 (Topic: Comparative Animal Physiology). Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 463L. Plant Systematics.

Examine the principles of plant classification, phylogeny, and diversity as exemplified by families and species of flowering plants found seasonally in Texas with an emphasis on the local flora. Two lecture hours and three laboratory hours a week for one semester, with additional field trips to be arranged. Biology 463L and Integrative Biology 463L may not both be counted Prerequisite: The following with grades of at least C-: Biology 325 or 325H; and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 364. Microbial Ecology.

Examine population, community, and ecosystem ecology of microbes and microbiomes. Three lecture hours a week for one semester. Biology 364 and Integrative Biology 364 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 365S. Human Systems Physiology.

Explore an overview of human physiology, including the cardiovascular, respiratory, and renal systems, with an emphasis on critical thinking, integration, and application. Examine membrane movement, osmolarity and tonicity, endocrinology, and neurophysiology. Three lecture hours and one discussion hour a week for one semester. Integrative Biology 365S and Biology 365S may not both be counted. Prerequisite: Biology 311C; Biology 325 or 325H, and Chemistry 301, 301C, or 301H with a grade of at least C- in each; and one of the following with a grade of at least C-: Mathematics 408C, 408K, 408N, 408R, or Statistics and Data Sciences 302F.

INB 165U. Human Systems Physiology Laboratory.

Examine human physiology through case studies and hands on experience. Explore the scientific method through the reading of scientific journal articles; writing protocols for basic physiological experiments; and collecting, analyzing, and presenting data. Three laboratory hours a week for one semester. Biology 165U and Integrative Biology 165U may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-, and credit or registration for Integrative Biology 365S (or credit for Biology 365S).

INB 369F. Field Herpetology.

Explore species identification by sight and sound, and research techniques such as sampling populations, data collection, and analysis. One lecture hour and five laboratory hours a week for one semester, with additional field hours to be arranged. Biology 369F and Integrative Biology 369F may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 369L. Herpetology.

Examine the biology of amphibians and reptiles, including evolution, ecology, behavior, physiology, life history, and identification. Three lecture hours and three laboratory hours a week for one semester. Biology 369L and Integrative Biology 369L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 370. Evolution.

Introduction to modern evolutionary biology, focusing on the evolution of molecular, developmental, morphological, and behavioral traits. Examine the genetic and ecological bases of evolutionary changes within populations and of evolutionary divergence in animals and plants. Three lecture hours and one discussion hour a week for one semester. Biology 370 and Integrative Biology 370 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 470L. Evolution Laboratory.

Perform group lab and field experiments and observations, computer simulations and analyses, and independent research. Three laboratory hours and two lecture hours per week for one semester. Prerequisite: Credit or registration for Integrative Biology 370 with a grade of at least C-.

INB 471. Introduction to Systematics.

Study diversification of living and fossil organisms, including speciation, biogeography, taxonomy, and phylogeny of genes, species, and higher taxa. Three lecture hours and three laboratory hours a week for one semester. Biology 471 and Integrative Biology 471 may not both be counted. Prerequisite: Biology 325 or 325H, and Integrative Biology 370 (or Biology 370) with a grade of at least C-.

INB 471G. Natural History Museum Science.

Introduction to curatorial practices in natural history museums. Three lecture hours and one discussion hour a week for one semester. Biology 471G and Integrative Biology 471G may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 371L. Experimental Physiology.

Explore an experimental approach to physiological mechanisms by which animals adapt to their environment. Three lecture hour and four laboratory hours a week for one semester. Biology 371L and Integrative Biology 371L may not both be counted. Prerequisite: The following with a grade of at least C-: Biology 325 or 325H, and Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 373. Ecology.

Introduction to ecology, the study of relationships among organisms and between organisms and their environment; adaptations, population, communities, and ecosystems. Examine both plants and animals and both terrestrial and aquatic ecosystems. Three lecture hours and one discussion hour a week for one semester. Biology 373 and Integrative Biology 373 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 373L. Ecology Laboratory.

Explore intensive field ecology, including group field experimentation and observation, independent projects, and field trips to other vegetation zones. Four laboratory hours and two lecture hours a week for one semester. Biology 373L and Integrative Biology 373L may not both be

counted. Prerequisite: Credit with a grade of at least C- or registration for Integrative Biology 373; and the following with a grade of at least C-: Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Science 311.

INB 374. Plant Anatomy with Histological Techniques.

Examine tissue organization and cellular details of stems, roots, and leaves of seed plants, with emphasis on development and function. Three lecture hours a week for one semester. Biology 374 and Integrative Biology 374 may not both be counted. Prerequisite: Biology 325 or 325H with a grade of at least C-, and concurrent registration in Integrative Biology 174L.

INB 174L. Laboratory in Plant Anatomy and Histological Techniques.

Explore a demonstration of cellular details and tissue systems of plant organs. Discuss the preparation of plant materials for histological examination. Three laboratory hours a week for one semester. Biology 174L and Integrative Biology 174L may not both be counted. Prerequisite: Concurrent registration for Integrative Biology 374 (or credit for Biology 374); and the following with a grade of at least C-: Biology 206L, Integrative Biology 208L (or Biology 208L), Molecular Biosciences 226L (or Biology 226L), or Environmental Sciences 311.

INB 375. Conservation Biology.

Apply the principles of ecology to the preservation of wild plant and animal species and to the preservation, management, and restoration of natural and seminatural ecosystems. Focus on scientific, biological aspects of issues such as endangered species protection, preserve design, and forest management. Three lecture hours a week for one semester. Biology 375 and Integrative Biology 375 may not both be counted. Offered on the letter-grade basis only. Prerequisite: Biology 325 or 325H with a grade of at least C-, and Integrative Biology 357 (or Biology 357), 359J (or Biology 359J), or 373 (or Biology 373) with a grade of at least C-.

INB 376G. Biodiversity in the Anthropocene.

Restricted to students in the Plan II honors program. Examine how global change is impacting biodiversity in what is now called the Anthropocene -- a new geological era where humans are the largest driver of changes in the earth system. Three lecture hours per week for one semester. Biology 337 (Topic: Biodiversy in the Anthropocene) and Integrative Biology 376G may not both be counted.

INB 177, 277, 377. Undergraduate Research.

Conduct laboratory or field research in the various fields of biological science under the supervision of one or more faculty members. Supervised individual research. May be taken three times for credit. May be repeated for credit. Prerequisite: Biology 325 or 325H with a grade of at least C-, and consent of instructor.

INB 478L. Comparative Vertebrate Anatomy.

Study vertebrate morphology from developmental anatomy to the function, biomechanics, and phylogenetic relationships of living and fossil taxa. Three lecture hours and four laboratory hours a week for one semester. Only of the following may be counted: Biology 478L, Integrative Biology 478L, Kinesiology 424K. Prerequisite: Biology 325 or 325H with a grade of at least C-.

INB 379H, 679H. Honors Tutorial Course.

Perform original laboratory or field research project under the direction of a faculty mentor, leading to a thesis or research presentation for students in the honors program in biology. For each semester hour of credit earned, the equivalent of one-and-one-half lab hours a week for one semester. Only one of the following may be counted: Biology 379H, 679H, Integrative Biology 379H, 679H, Molecular Biosciences 379H, 679H. Prerequisite: Consent of the student's research supervisor and the departmental honors advisor.

Graduate Courses

INB 698. Thesis.

The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in the Ecology, Evolution and Behavior or Plant Biology graduate program and consent of the graduate advisor; for 698B, Integrative Biology 698A or the equivalent.

INB 398R. Master's Report.

Prepare a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in the Ecology, Evolution and Behavior or Plant Biology graduate program and consent of the graduate advisor.

INB 399W, 699W, 999W. Dissertation.

May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Professional Courses