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BIOL 101: Biology Freshman Seminar. 1 credit. This course is for the first sowing matriculation with a greater biology declared. This elective will serve as a platform for biology students to get practical advice and directions for how to approach courses, careers in biology and professionalism. Offered by Biology. Limited to three attempts. BIOL 102: I-Survey Introductory Biology of Biodiversity and Ecology. 4 credits. This course of investigation introduces students to the evolution of biological diversity on Earth and explores how organisms interact with each other and their environment. The topics covered include the domains of life, as new species arise, the evolution of populations and the main topics in ecology and conservation. Survey course suitable for any major. Biology majors can not take after they were taken level 200 BIOL courses or above. Offered by Biology. Limited to three attempts. Equivalent to BIOL 104. BIOL 103: Introductory biology II-Survey of cell and molecular biology. 3 credits. This survey on cell and molecular biology provides students with an understanding of basic cellular biology and an appreciation of the impact of molecular biology research on current social challenges. Topics include how life emerged on early earth, structure and cell function, genes and heredity, plus viruses and genetic engineering. Notes: Students are encouraged to take BIOL102 or equivalent before BIOL103. Survey course suitable for any major. Biology Majors can not take after BIOL200 level or over courses have been taken. Offered by Biology. Limited to three attempts offered by Biology. Limited to three attempts. Equivalent to BIOL 103T. BIOL 105: Laboratory of Introductory Biology II. 1 credit. Laboratories covering the chemical base of life, structure and function ofof Mendelic and human genetics. Offered by Biology. Limited to three attempts. BIOL 106: Introductory Biology Laboratory II. 1 credit. The structure and function of the main systems of animal organsan examination of the structure and function of the plants, emphasizing the highest plants. Notes: Not available for students who took BIOL 104 or equivalent. Offered by Biology. Limited to three attempts. BIOL 107: Intro Biology II Conference. 3 credits. Topics include structure, function, homeostatic mechanisms, organ systems, behavior, higher plant systems and main concepts in ecology. Note: Students are strongly advised to take BIOL 103 before BIOL 107. It can not be taken after BIOL 200-level or over courses have been taken. Offered by Biology. Limited to three attempts. BIOL 124: Human Anatomy and Physiology. 4 credits. Introduction to the structure and function of the main systems of organs of the body. Note: it must be taken in sequence. It does not meet the requirement of natural science in COS or CHSS. The course requires the use of organisms. Not available for Biology major. Offered by Biology. Limited to three attempts. BIOL 125: Human Anatomy and Physiology. 4 credits. Introduction to the structure and function of the main systems of organs of the body. Notes: It does not meet the requirement of natural science in COS or CHSS. The course requires the use of organisms. Not available for Biology major. Offered by Biology. Limited to three attempts. BIOL 140: Plants and People. 3 credits. An introduction to the interaction of plants and people from a biological perspective and tools to continue critical evaluation throughout the life of emerging issues in human nutrition, agriculture, medicine and global environmental changes in relation to plant biology. Designed a green leaf course. Offered by Biology. Limited to three attempts. BIOL 177: Ecological applications. 3 credits. This course introduces ecosystem concepts and applications to natural and managed ecosystems. That's what this is.will discuss the natural environment, ecological processes and human interaction with and management of this environment. humanity plays an important rolein all the environments of the world and there is not much, if anything, of the surface of this planet that remains intact by human actions. biologists, ecologists, environmental scientists and political leaders must provide for the needs of humanity, mitigating negative impacts on the natural environment. offered by biology. limited to three attempts. biol 213: structure and cell function. 4 credits. for scientific majors and pre-professionals in life sciences. introduction to cellular chemistry, metabolism and genetics. Note: for scientific majors and pre-professionals in life sciences. offered by biology. limited to three attempts. biol 214: biostatistics for major biology. 4 credits. introduction to statistics used in life sciences. offered by biology. limited to three attempts. biol 246: introductory microbiology. 3 credits. introduction to microbial cell structure, physiology and pathogenicity. emphasizes the control of microorganisms, host-parasite interactions, including immunology, and viral and bacterial pathogens. Note: not available for major credit biology or for students who have biol 305. offered by biology. limited to three attempts. biol 295: summer research in biology. 1-3 credits. Students enrolled in this course study topics related to life science in an approved research environment during the summer. This course may involve one or more of the following: reading peer-revision literature, conducting a field or laboratory study, attending scientific seminars and workshops, writing an abstract, preparing and presenting a poster, or writing a research paper. Notes: can be assumed for 1 to 3 credits and repeated once for a total of 3 credits. the total limit for biol 295 is 3 credits towards 44 credits per bs or ba (until when the number of 100-200 level credits for biology areas was not exceeded.) offeredBiology. can be repeated within the degree for up to 3 credits. biol 300: biodiversity. 4 credits. this course explores the fundamentalsgovern organic biology, introducing the three domains of life: archaea, bacteria, eukaryotes, more viruses. offered by biology. limited to three attempts. equivalent to biol 303, biol 304. biol 301: biology and society. 3 credits. biological problems facing society including pollution, cloning, emerging diseases, global warming and overpopulation. Notes: not available for elective credit of greater or lesser biology. can be repeated if the topic is different. offered by biology. can be repeated within the deadline. biol 302: alternative careers in biology. 1 credit. This course will explore non-traditional careers using a degree of biology. Weekly seminars will allow biology graduates to discuss and explore the wide range of career options using a Bachelor in Biology with professionals in those sectors. Notes: only biology major. offered by biology. limited to three attempts. biol 303: animal biology. 4 credits. emphasizes the structure and function of vertebrates, but examines all animal groups and protozoans. also covers the evolutionary theory and evolutionary history of the main animal groups. the course requires the or of organisms. offered by biology. limited to three attempts. equivalent to biol 300. biol 304: vegetable biology. 4 credits. introduction to the study of plants, their structure, development, nutrition and ecology. emphasizes flower plants, but examines all groups and their phylogenetic relations. offered by biology. limited to three attempts. equivalent to biol 310. biol 305: biology of microorganisms. 3 credits. morphology, physiology and pathogenicity of certain groups of bacteria, fungi and viruses; it emphasizes host-parasite interactions. offered by biology. limited to three attempts. biol 306: biology of microorganisms laboratory. 1 credit. laboratory techniques in the septure, coloring and identification of microorganisms.from Biology. Limited to three attempts. BIOL 308: Foundations of Ecology and Evolution. 5 credits. Anof the principles of ecology, evolution and impact of man on the world around them. Topics include evolutionary history, biological diversity, and analyzes interactions between organisms and between organisms and their environment. offered by biology. limited to three attempts. equivalent to biol 308t, biol 328, biol 338. biol 309: introduction to the oceanography. 3 credits. introduction to the chemical, biological and geological aspects of the ocean environment. can include field trips. offered by biology. limited to three attempts. equivalent to evpp 309, geol 309. biol 311: general genetics. 4 credits. fundamental principles of heredity and modern developments in this field. offered by biology. limited to three attempts. biol 312: biostatistics for bioinformatics. 4 credits. use of descriptive and inferential probability and statistical techniques in the interpretation of biological data. offered by biology. limited to three attempts. biol 314: introduction to research design and analysis. 4 credits. introduction to research design in a wide range of biological disciplines. the conference will focus on how to design experiments with adequate controls for statistical analysis, as well as obtaining permits and authorizations from appropriate agencies. in acting students will be data sets to analyze. offered by biology. limited to three attempts. biol 318: conservation biology. 3 credits. Introduction to science used to identify species in need of conservation and techniques to manage and protect organisms. offered by biology. limited to three attempts. equivalent to evpp 318. biol 320: anatomy of comparative choir. 4 credits. compares the anatomy and morphology of the main groups of agreements. lab emphasizes shark, mud, cat and rabbit. offered by biology. limited to three attempts. biol 322: development biology. 3 credits. principlesembryonic and differentiation in animal species at cellular, molecular, tissue and whole organism. OfferedBiology. limited to three attempts. biol 323: biology development laboratory. 1 credit. This laboratory will explore the first development processes using classic and modern development techniques, biology. students will have the opportunity to propose and realize a small independent project using zebrafish as a model organism. offered by biology. limited to three attempts. biol 326: animal physiology. 3 credits. general consideration of the animal function which emphasizes the problems of life and common methods to solve them. topics include intercellular communication (nervous and endocrine,) metabolism, water balance and solute, and cardiovascular and respiratory physiology. offered by biology. limited to three attempts. biol 331: invertebrated zoology. 4 credits. investigation into the invertebrate vial, excluding insects, showing morphology, philologists and general biology of these groups. offered by biology. limited to three attempts. biol 332: biology of insects. 4 credits. Insect investigation including taxonomy, morphology, physiology, behavior, ecology and economic importance. offered by biology. limited to three attempts. biol 334: paleontology of the vertebrate. 4 credits. vertebrate paleontology explores the evolution of vertebrates from early paleozoic to recent. the course will cover the systematics, anatomy, paleogeography and ecology of extinct vertebrates. discussions will include fish, first tetrapods and amniotes, dinosaurs, birds and mammals. the laboratory portion includes techniques of paleontology, analysis and study of specimens and fossil casts. a weekend trip is included. offered by biology. limited to three attempts. equivalent to geol 334. biol 335: forensic entomology. 3 credits. explores the oo of insects and other arthropods in the field of forensic science as it relates to investigations of human and animal abuses, foods and other productson thefts, illegal drug trafficking and non-ethical entomological practices. the oo and the presentation ofinformation will be discussed by such investigations in judicial proceedings. offered by biology. limited to three attempts. biol 336: invertebrated paleontology. 4 credits. classification, evolution and distribution of common invertebrates fossils. can include field trips. Notes: may include field trips. offered by biology. limited to three attempts. equivalent to geol 312. biol 338: laboratory for foundations of ecology and evolution. 2 credits. This is an intensive writing and laboratory experience to transfer students who previously took a course equivalent to biol 308 who did not have a laboratory and did not meet the intensive writing requirements in the major of biology. this course is combined with biol 308. offered by biology. limited to three attempts. biol 340: introductory botany. 4 credits. introduction to the study of plants, their structure, development, nutrition and ecology. surveys of many plant groups and their phylogenetic relationships will be studied. offered by biology. limited to three attempts. biol 344: plant diversity and evolution. 4 credits. It investigates the diversity of vascular plants, including angiospermi, their evolutionary relationships, and the basis of their classification and identification. offered by biology. limited to three attempts. biol 345: vegetable ecology. 4 credits. It investigates the interaction of plants with their abiotic and biotic environment, the plant communities of virginia and their causes, and global processes affecting plant distributions in geological time. notes: three trips on Saturday or Sunday required. offered by biology. limited to three attempts. biol 350: freshwater ecosystems. 4 credits. studies physical, chemical and biological processes in lakes, streams and wetlands. lessons, field trips and laboratory exercises teach physical and chemical aspects of water systems and life cycles, and adaptations of organismsOffered by Biology. Limited to three attempts. Equivalent to aBIOL 351: Seminar of Conservation. 2 credits. It examines key conservation issues, based on readings and discussions of primary literature. It teaches professional development skills for conservation scientists, including fundraising, poster presentations and interpretation of results for different audiences. Develop skills to get internships, jobs, or graduate positions. Offered by Biology. It can be repeated within the degree for a maximum of 4 credits. CONS 400. BIOL 352: monitoring and evaluation of biodiversity. 4-6 credits. Evaluation, monitoring and conservation of species and habitats. Use species and habitat sampling tools and how to assess their effectiveness. Apply this practical and practical knowledge to prepare a series of reports and recommendations for future work. Offered by Biology. Limited to three attempts. Equivalent to CONS 404. BIOL 353: Small Population Management. 4 credits. Invests the vulnerability of endangered species and methods of preserving genetic diversity in small populations, both in nature and in captivity. It teaches modeling and laboratory techniques that promote successful captive breeding, such as hormonal analysis and assisted reproductive techniques. He examines captive species in the Smithsonian Conservation Biology Institute to learn practices and breeding skills from custodians and biologists. Offered by Biology. Limited to three attempts. Equivalent to CONS 406. BIOL 354: Research in Conservation. 5 credits. One-on-one research experience with a conservation professional over 5 weeks (about 36 hours a week) on a conservation research project associated with that practitioner's program. Offered by Biology. Limited to three attempts. BIOL 355: Ecosystem Restoration and Ecosystem Restoration. 4 credits. Provides definition, classification andecological engineering and ecosystem restoration. describes the ecology of the general system, the restoration of the ecosystem, and the use ofprocesses to provide ecosystem services to society and benefits to nature. Provides students with a perspective oriented to environmental studies systems. Students will study the principles in the ecology of the general system and in ecological engineering and explore practices in a sustainable ecological design by creating a practical experimental design project with field/meocosm microcosms in a new Wetland Mesocosm Compound on campus. This course will involve a field trip (1-2 days). Offered by Biology. Limited to three attempts. BIOL 356: Landscape and Macrosistemi Ecologia. 4 credits. It detects and characterizes patterns in landscapes. Investigate how they form and change over time, and with anthropogenic influences. Models of populations and communities through landscapes, and ways of managing them to achieve the objectives in the management of species and ecosystems at local, regional and continental scale. Offered by Biology. Limited to three attempts. Equivalent to CONS 405. BIOL 357: Ecology field skills. 4 credits. In this course, you will be introduced to a variety of field techniques used in ecological research through occasional classroom lessons and intensive field activities. It begins with an overview of the sampling methods common to the discipline and progress of hands-on and remote sampling techniques for plants, insects, amphibians, reptiles, birds and mammals. You will become familiar with the flora and fauna of Virginia, gain experience in sampling and identification of representative plants, invertebrates and vertebrates, and gain experience in making observations and characterizing ecological interactions related to population, community and behavioral ecology. In addition, you will maintain a field magazine and complete a research proposal following the adapted guidelines of Mason's OSCAR program. Come to Front Royal ready to work hard and spendDays in the field. Offered by Biology. Limited to three attempts. BIOL 374: Biogeography: Space, Time and3 credits. An investigation into the relationship between the distribution of plants and animals on the earth's surface and physical geography and environmental characteristics. Offered by Biology. Limited to three attempts. Equivalent to GGS 321. BIOL 377: Applied Ecology. 3 credits. Introduction to ecosystem concepts and their applications to natural and managed ecosystems. Offered by Biology. Limited to three attempts. Equivalent to EVPP 377. BIOL 378: Laboratory of Applied Ecology. 1 credit. Application of ecosystem concepts in natural and managed ecosystems. Offered by Biology. Limited to three attempts. BIOL 379: RS: Ecological sustainability. 4 credits. Introduces the concepts and applications of several important topics related to ecological sustainability. It focuses on the role of soils in maintaining and managing environmental quality. It teaches students to understand and interpret scientific data presented in various types of literature covering ecological sustainability. Offered by Biology. Limited to three attempts. EVPP 378. BIOL 382: Introduction to Virology. 3 credits. Introduction to the fundamental nature of viruses, their classification, morphology, chemistry and their role in human disease. Offered by Biology. Limited to three attempts. BIOL 385: Biotechnology and Genetic Engineering. 3 credits. It emphasizes theory and applications, including the social significance and implications of biotechnology applied to medicine, agriculture and the environment. Offered by Biology. Limited to three attempts. BIOL 401: Phage Discovery. 3 credits. Discovery-based university research course where students purify phage from the ground, use a variety of microbiology techniques, annotate phage genome and use bioinformatic analysis. Offered by Biology. Limited to three attempts. BIOL 402: Applied and industrial microbiology. 3 credits. Biology of meaning microorganismsand industrial. Includes food production, deterioration and andfermentation technology, waste disposal, water purification, biodeterioration and decomposition. offered by biology. limited to three attempts. biol 403: techniques in applied and industrial microbiology. 1 credit. laboratory exercises illustrate basic and applied methods, including commercially useful strain insulation. discusses the production and purification of industrial products. offered by biology. limited to three attempts. biol 404: medical microbiology. 3 credits. fundamental principles of infectious diseases caused by bacteria and viruses. discusses genetics and molecular mechanisms of pathogenicity. offered by biology. limited to three attempts. biol 405: microbial genetics. 4 credits. study of structure and function of the bacterial dna, underlining the mechanisms of transfer, expression and regulation of the gene. introduces dna repair, mutation and life cycles of bacteriophage. offered by biology. limited to three attempts. biol 407: microbial diversity. 4 credits. effect of studies of microorganisms on ecological and medical phenomena. stress and evolution of microbial species, biochemical cycling and species interactions. laboratory stress uses cultural, biochemical and phylogenetic methods to study microbial isolation, metabolism and identification. offered by biology. limited to three attempts. biol 408: mushrooms, moles and society. 3 credits. provides a modern and complete knowledge of fungal biology including classification, phylgenesis, structure, physiology/metabolism, growth and development, genetics, industrial applications including biotechnology, ecological roles, including pathogenic interactions with plants, animals and man. offered by biology. limited to three attempts. equivalent to evpp 408. biol 409: medical mycology. 3 credits. provides the student with current knowledge of both medical and microbiological aspects of fungal diseases in man,Ethiopian agents, geographical distribution, epidemiology, transmission, transmission,of pathogenicity, laboratory detection and therapy associated with major human mycosis. Offered by Biology. Limited to three attempts. EVPP 409. BIOL 411: Advanced General Genetics. 3 credits. Topics include quantitative genetics, extrachromosomal inheritance and special techniques such as mutation screening, development genetics, cancer genetics, behavior genetics, evolutionary genetics and genetic technology ethics. Offered by Biology. Limited to three attempts. BIOL 412: Phage Genomics. 3 credits. Bacteriophages, a virus that infects bacteria, are the most abundant organisms in the biosphere. This course explores the genomes of mycobacterials (bacterialophages that infect mycobacterials) using bioinformatic tools. In this course, two genomes of mycobacterialophage will be noted and compared to other genomes of mycobacterialophage sequentied. Bioinformatic tools will be used to learn more about the bacteriophageal protein function, immunity and structure of the genome. Each course student formulates a comparative genomic demand and uses bioinformatic techniques learned to answer that question, the results of these experiments will be transmitted in the form of a research and oral presentation paper. This class is designed to give students the opportunity to actively participate in the process of scholarships and research, as well as learn valuable genomic and bioinformatic skills. Offered by Biology. Limited to three attempts. BIOL 413: Histotechniques. 3 credits. Introduces theory and methods for preparing tissue samples from animal samples or plants for examination with light or electron microscope. Offered by Biology. Limited to three attempts. BIOL 417: Selected topics in Molecular and cellular Biology. 1-4 credits. Study of current topics in molecular and cellular biology. Notes: The themes vary.from Biology. It can be repeated within the deadline for a maximum of 8 credits. BIOL 418: Current topics in Microbiology. 3Study of current topics in microbiology. Notes: The themes vary. Offered by Biology. It can be repeated within the degree for up to 6 credits. BIOL 420: Vaccines. 3 credits. Immunology, virology and microbiology of vaccines. New generation and classic vaccine strategies and practices. Current and future vaccines. Offered by Biology. Limited to three attempts. BIOL 421: Human disease genetics. 3 credits. Emphasizes strategies used to identify genes involved in human genetic diseases. Both monogenic and complex genetic diseases will be presented, as well as genetic screening and counselling principles. Offered by Biology. Limited to three attempts. BIOL 422: Cellular Biology Stem and Regenerative Medicine. 3 credits. A wide overview of the biological principles governing stem cell populations. The functional roles of stem cells play in regular normal development and contribute to state-disease pathologies. An examination of the therapeutic potential of stem cells through "regenerative medicine". Offered by Biology. Limited to three attempts. BIOL 423: Biology of obesity and weight loss. 3 credits. This course covers the causes and consequences of obesity and weight loss, including general epidemiology and pathology of co-soft conditions associated with obesity. The relative contributions of genetic and environmental factors affecting weight gain will be covered and recent trends in obesity research. Offered by Biology. Limited to three attempts. BIOL 425: Human physiology. 3 credits. The approach of the organ system to the study of homeostasis, including the functions of the cardiovascular, respiratory, renal, digestive, endocrine and nervous system. Offered by Biology. Limited to three attempts. BIOL 426: Aging mechanisms. 3 credits. A course in which students will demonstrate knowledge of cell and molecular mechanisms thatsystematic changes that cause aging, and understand complex biological processes involved in complex biological processsystems. Offered by Biology. Limited to three attempts. BIOL 427: ecology and conservation of diseases. 3 credits. It presents the transdisciplinary discipline of conservation medicine, the study of relations between organism and ecosystem health and environmental conditions. Topics include infectious and non-infective diseases, pathogens, processes and impacts on human health, biotics and ecosystem, and how to deal with the consequences of diseases to populations and ecological communities. Notes: This co-meet course with EVPP 527. Undergraduates in this course will have separate reading and writing tasks (shorter) and will be classified according to a different rubric than graduate students. Offered by Biology. Limited to three attempts. Equivalent to EVPP 427. BIOL 429: Biological Foundations of Pharmacology. 3 credits. An introduction to the basics of pharmacology that focuses on human body systems and how drugs modulate these systems in order to maintain homeostasis. Disease states will be incorporated into the study of the main drug classes to strengthen students' understanding of drug use. Offered by Biology. Limited to three attempts. BIOL 430: Advanced Human Anatomy and Physiology I. 4 credits. The approach of the organ system to study the structure and function of the human organism and the maintenance of homeostasis. Detailed discussion of anatomical structures and their functions of endocrine, nervous, muscular, skeletal and integrative systems after the introduction to the cellular and woven levels of the organization. Topics also include the pathology selected for each organ system; current therapeutic interventions are addressed. Note: Biology 124 is not approved for Biology Majors. Offered by Biology. Limited to three attempts. BIOL 431: Advanced Human Anatomy and Physiology II. 4 credits. Continuous study of structure and functionhuman and homeostasis maintenance. Detailed discussionstructures and their functions of the systems of cardiovascular, lymphatic, respiratory, urinary, digestive and reproductive organs. Topics also include selected disorders for each organ system to illustrate the breakup of homeostasis. Offered by Biology. Limited to three attempts. BIOL 432: Clinical applications in Human Physiology. 4 credits. The systems of selected organs will be discussed in relation to their physiology, pathology and pharmacology. Presentations of case studies will be an integral part of the class. Offered by Biology. Limited to three attempts. BIOL 433: Selected topics in Plant Biology. 1-4 credits. Lesson or field course in botany. The topic varies with the instructor's specialty. Offered by Biology. It can be repeated within the degree for up to 8 credits. BIOL 435: Selected topics in Biology. 4 credits. The topics vary with the instructor's specialty. Offered by Biology. It can be repeated within the degree for up to 8 credits. BIOL 437: Orinthology. 4 credits. Study of evolution, systematics, physiology, ecology and behaviour of birds, emphasizing work on the field. Offered by Biology. Limited to three attempts. BIOL 438: Mammalogy. 4 credits. Study of evolution, systematics, physiology, ecology and behavior of mammals, emphasizing field work. Offered by Biology. Limited to three attempts. BIOL 439: Erpethology. 4 credits. Study of evolution, systematics, physiology, ecology and behavior of reptiles, emphasizing work on the field. Offered by Biology. Limited to three attempts. BIOL 440: Biology of the Field. Credits for 7-11. Direct field studies that emphasize ecology and behavior. Topics vary, but include the design of field manipulations, data collection and analysis, and the introduction to study site organisms. It can include field trips. Notes: Students endure the costrequired field trips. It can be repeated with the permission of the Biology Program. Total limit of 4 credits. This course does not meet the requirements of the BA or BS degree, which claim that students must complete at least one (BA)or two (level B) higher division courses which include a laboratory. Offered by Biology. It can be repeated within the degree for a maximum of 4 credits. EVPP 440. BIOL 442: Urban ecosystems and processes. 4 credits. Overview and introduction of challenges and opportunities that urban environments present to plants and animals living in cities and ways in which organisms and ecosystems respond. Ecosystem ecology for engineered ecosystems with reviews om urban metabolism, energy balances, water cycles and soil ecology taught. The creation and restoration of green infrastructure is discussed. Note: The course will involve students to design and conduct a small-scale green infrastructure experiment/design on campus. Offered by Biology. Limited to three attempts. EVPP 442. BIOL 443: Tropical ecology. 3 credits. Introduction to abiotic and biotic factors that define tropical habitats. The course underlines evolution, taxonomic diversity and plant-animal interactions in the terrestrial tropic forests. Offered by Biology. Limited to three attempts. BIOL 444: Laboratory of Tropical Ecology. 1 credit. Introduction to field-based scientific research. This course focuses on methods to test hypotheses related to tropical and animal plant biology. Offered by Biology. Limited to three attempts. BIOL 446: Ecological and evolutionary physiology. 3 credits. Physiological response organisms use to survive and reproduce successfully in their evolving environments. Temperature, salinity, low levels of oxygen and diet will be covered by a phylogenetic and energetic perspective. Offered by Biology. Limited to three attempts. BIOL 449: Marine Ecology. 3 credits. Plants and animals of marine environments and physical and chemical conditions that affect their existence. Offered by Biology. Limited to three attempts. Equivalent to449. biol 450: marine conservation. 3 credits. provides an overview of threatsthe marine environment, and discusses scientific, socioeconomic and political issues behind marine conservation. covers the categories of marine pollutants (chemicals, biological and physical contaminants) and their impacts on the marine ecosystem, as well as the impacts on humans (health, social and economic,) threats to key marine species (e.g. corals, sharks, turtles and marine mammals) and initiatives and laws developed to reduce these threats. The scientific and socio-economic problems that hinder sustainable fisheries management and science and policy behind the debate on global warming are also discussed. the course also provides an overview of marine environmental law issues and marine conservation policy policies. offered by biology. limited to three attempts. equivalent to evpp 421. biol 452: immunology. 3 credits. Topics include the structure and function of immunoglobulins, the role of cellular-mediated immunity, the protective role of the immune system, and the disease and injuries related to immune system malfunctions. offered by biology. limited to three attempts. biol 453: immunology laboratory. 1 credit. relevant techniques for biol 452, including immunoabsorbant analysis related to enzymes, immunodiffusion, protein electrophoresis and immune fixation. offered by biology. limited to three attempts. biol 454: biology and marine mammal conservation. 3 credits. covers the evolution, biology, ecology and behavior of marine mammals from polar bears and marine otters to whales and dolphins. conservation and marine mammals policy is also an important component of the course; The conference sessions are dedicated to the problem of whales, threats to marine mammals, and recent conservation issues such as marine mammals and noise pollution. the course also includes a series ofguests from a variety of international marine mammals experts. offered by biology. limited to three attempts. equivalent to evpp 419. biol 455: field of biology and marine mammal conservation1 credit. It provides laboratories, seminar sessions and field work to accompany BIOL 454-001 - biology and marine conservation. The field work includes several boat trips throughout the day. It can happen in the United States or abroad. The two-week residential field course takes place in Scotland at the University (London) Marine Biological Station, which is equipped with boats and laboratories. Offered by Biology. Limited to three attempts. EVPP 420. BIOL 457: reproductive strategies. 3 credits. Introduction to research and evolutionary theory of sex and reproduction. It covers topics from the evolution of sex and gender to the evolution of complex reproductive strategies that involve behaviors such as mathematical recognition, courtship exposures, territoriality, polygamy and prole care. The conferences focus mainly on multicellular animals, but also include discussions of unicellular and eukaryote prokaryotes and plants. Offered by Biology. Limited to three attempts. BIOL 459: Fungi and Ecosystems. 3 credits. Consider the impact of mushrooms on ecosystems in terms of biogeochemical cycling, primary and secondary production, and adjusting the structure of the community and the populations of the individual species through their activities as symbionts and parasites. Discuss the role of mushrooms in ameliorant pollutants produced by anthropogenic activity. Offered by Biology. Limited to three attempts. Equivalent to BIOL 559, EVPP 551. BIOL 460: Infectious Diseases Wildlife. 3 credits. During this course, wildlife diseases will be examined with emphasis on causes and mechanisms, pathobiology, ecology and epidemiology and meaning of the population. We will explore methods of diagnosis, control, prevention and epidemic of investigation as they apply to the management and conservation of wildlife populations. In addition, diseases that cross theof the species will be examined. Offered by Biology. Limited to three attempts. EVPP 460. BIOL 465: History. 4 credits. Microscopy Structuretissues and organs, with emphasis on vertebrates. Offered by Biology. Limited to three attempts. BIOL 468: Vertebrate Natural History. 4 credits. Introduced vertebrates with emphasis on systematic, evolution, history of life, behavior and ecology. Laboratory emphasis on identifying, taxonomy and natural history of local vertebrates. Offered by Biology. Limited to three attempts. BIOL 470: Dinosaur Biology. 3 credits. Introduction to evolution, diversity and biology of dinosaurs and their descendants. In fact, on how current biological knowledge is used to estimate and interrelate morphology, physiology and ecology of these extinct animals. Offered by Biology. Limited to three attempts. BIOL 471: Evolution. 3 credits. The process of evolution underlines the role of genetics, the properties of populations and population differentiations. Offered by Biology. Limited to three attempts. BIOL 472: Introductory animal behavior. 3 credits. Study of mechanisms, functions and evolution of behavior. Offered by Biology. Limited to three attempts. BIOL 473: Introductory laboratory in animal behavior. 1 credit. Field or laboratory study in animal behavior with emphasis on mechanisms, functions and behavior evolution. Stresses experimental design and data analysis. Intensive writing workshop. Offered by Biology. Limited to three attempts. BIOL 480: The diversity of fish. 3 credits. This course deepens the biology and ecology of fish. Subjects of this class include fish anatomy, taxonomy, evolution, habitat adaptations, community dynamics and ecosystem interactions. The course will also touch human impacts on fish and conservation. Offered by Biology. Limited to three attempts. BIOL 482: Introduction to molecular genetics. 3 credits. Basic concepts of structure and function of genetic materialMolecular level. Offered by Biology. Limited to three attempts. BIOL 483: General Biochemistry. 4 credits. Structure and function of proteins, proteins,and lipids. Enzymology, metabolism and its control. Offered by Biology. Limited to three attempts. Equivalent to CHEM 463. BIOL 484: Cellular signal and disease. 3 credits. Expand on key concepts of eukaryotic cell biology, including cell cycle, cytoskeleton, cell transport, membrane and protein traffic and cell signaling. Offered by Biology. Limited to three attempts. BIOL 485: Cell phone signaling laboratory. 2-3 credits. Introduction method of application research through cellular and molecular biology techniques including: the culture of tissue, western blotting, PCR, microscope, cellular transfection and transformation. Offered by Biology. Limited to three attempts. Equivalent to BIOL 585. BIOL 486: Laboratory of Molecular Biology and Biotechnology. 2 credits. Introduction to the theory, techniques and practices used in modern molecular biotechnology laboratories. Offered by Biology. Limited to three attempts. BIOL 489: Practical teaching. 1-3 credits. Students acquire teaching experience in a lesson, laboratory or field environment under the supervision of a faculty member. Students' responsibilities may include a lecturing component, but may also include laboratory preparation, course material design, mentoring and classification. The course can be repeated once. Offered by Biology. It can be repeated within the degree for up to 3 credits. BIOL 491: Selected topics in Biology Technical Laboratory. 1-2 credits. Experimental studies using current methods in biology. It provides training for research in various aspects of biology. The subjects will depend on the professor who teaches the class. The course can only be repeated if the topic is different. Offered by Biology. It can be repeated within the degree for a maximum of 4 credits. BIOL 492: Senior seminar.credit. weekly seminar course that deals with recent advances in biology. topics selected by recent publications in the field. can be repeated for credit. offered by biology. can be repeated within the degree for a maximumcredits. BIOL 493: Honors Research in Biology. 1-2 credits. Field survey laboratory under the guidance of faculty member. Notes: The total limit for BIOL 493, 495 and 497 is 6 credits towards the 44 credit hours required for the degree of BS Biology and only 3 credits towards the 32 hours required for BA degree. Combined 493, 495 and 497 cannot exceed 4 credit hours in one semester. Offered by Biology. It can be repeated within the degree for a maximum of 2 credits. BIOL 494: Seminar of honor in Biology. 1 credit. Weekly seminar course that deals with recent advances in biology. Notes: Topics selected by recent publications in the field. Offered by Biology. It can be repeated within the degree for up to 6 credits. BIOL 495: Direct studies in biology. 1-2 credits. Study of a subject not otherwise available for the student. It can involve reading assignments, exercises, conferences, documents, presentations or field study, determined in consultation with instructor. It can be assumed for 1 to 2 credits and repeated once for a total of 2 credits. Total limit per combination of 495 and 497 is 6 credits towards 44 credits for BS and 3 credits towards 32 credits per BA. This course does not meet the requirements of the BA or BS degree. Offered by Biology. It can be repeated within the degree for a maximum of 2 credits. BIOL 497: Special problems in biology. 1-3 credits. Laboratory or field project leading to written research report. The search and paper completed under the instructor's guide. Notes: The total limit for 495 and 497 combined is 6 credits towards the 44 credits required for BS and 3 credits towards 32 credits for BA. BIOL 493, 495, 497 cannot exceed 4 credit hours in one semester. This course does not meet the requirements of the BA or BS degree, which claim that students must complete at least one (BA degree) or two (BS degree) higher division courses which include aoffered by biology. can be repeated within the degree for up to 6 credits. biol 498: 498:Seminar. 2 credits. Seminar on current scientific literature and literature on the research project undertaken by the student within the semester of research. Note: He must be enrolled in the Semester of Biology Research. Registration must be approved by a faculty sponsor and the director of the biology program and is limited to students who are enrolled simultaneously in BIOL 499. For students of the Biology Honors Program, this course can be used to replace a BIOL 494 credit: Honors Seminar in Biology. Offered by Biology. Limited to three attempts. BIOL 499: RS: Research in Biology. 6-9 credits. Laboratory or field investigation under the faculty's guidance. Students will earn 6-9 credits towards the BA or BS degrees in Biology. Note: He must be enrolled in the Semester of Biology Research. Registration requires successful application and approval by the biology program and faculty sponsor. Students who receive 9 credits for 499 will not be allowed to use BIOL 440, BIOL495 and/or 497 nor to the 32-hour BIOL required for BA degree, nor to the 44-hour BIOL required for BS degree. This course will meet a superior laboratory requirement for both BA and BS degrees in Biology. Offered by Biology. Limited to three attempts. BIOL 501: Microbial Diversity: An Atto Approach. 3 credits. In-depth study of the non-Patogen microbial world, emphasising the detection, enumeration and classification of microorganisms; their physiological and evolutionary relationships; and biotechnological applications. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 502: Adaptation in Biosystems. 3 credits. Biological communication networks adapt and maintain a robust function in the face of external stress, challenges or assaults. In order to survive, the cell and the organism must create a meaning tocomplex series of external and internal signals, and make decisions on how it should respond. This class includes a new integrated lifeperspective, i.e. adaptation, or maladaptation, in the face of constant change. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 506: Selected topics in Microbiology. 1-4 credits. The theme depends on the instructor's specialty. Notes: It can only be repeated with the permission of the ward chair. Offered by the School of Biology Systems. It can be repeated within the degree for up to 8 credits. BIOL 507: Selected topics in Ecology. Credits for 7-11. The theme depends on the instructor's specialty. Notes: It can only be repeated with the permission of the ward chair. Offered by the School of Biology Systems. It can be repeated within the degree for up to 8 credits. BIOL 508: Selected topics in Animal Biology. 1-4 credits. The theme depends on the instructor's specialty. Offered by the School of Biology Systems. It can be repeated within the term for a maximum of 9 credits. BIOL 509: DNA analysis of biological evidence. 3 credits. Historical development of DNA profiling methods, current DNA typing techniques and the continuous development of new forensic DNA typing methods. The emphasis will be placed on various analytical techniques used in the analysis of forensic tests. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 510: Forensic DNA analysis laboratory. 1 credit. Provides practical experience with forensic DNA analysis methods. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 515: Neurobiology of Development. 3 credits. Introduction to neurobiology of development with an overview of the embryonic development of the nervous system. Topics include neural induction, patterning/cell fate specification and neural circuit assembly along with modern molecular methods to explore neural development. Offered by the SchoolBiology. It cannot be repeated for credit. BIOL 516: Mammal neurobiology. 3 credits. Functional anatomy of mammalian brains by emphasising the regional and systemistic neuroanatomy of human beings. Related with material materialClinical neurology, where possible. the laboratory component includes brain dissections and clinical correlations. offered by the school of biology systems. cannot be repeated for credit. equivalent to psyc 531. biol 518: conservation biology. 3 credits. Introduction to science used to identify species in need of conservation and techniques to manage and protect organisms. offered by the school of biology systems. cannot be repeated for credit. biol 527: ecology and conservation of diseases. 3 credits. presents the transdisciplinary discipline of conservation medicine, the study of relations between organism and ecosystem health and environmental conditions. Topics include infectious and non-infective diseases, pathogens, processes and impacts on human health, biotics and ecosystem, and how to deal with the consequences of diseases to populations and ecological communities. Notes: this co-meet course with university level students. University students in this course will have separate reading and writing tasks (faster) and will be classified according to a different rubric than graduate students. offered by the school of biology systems. cannot be repeated for credit. equivalent to evpp 527. biol 532: animal behaviour. 3 credits. biol 533: topics selected in plant biology. 1-4 credits. the theme depends on the instructor's specialty. Notes: can only be repeated with the permission of the ward chair. offered by the school of biology systems. can be repeated within the degree for up to 8 credits. biol 537: ornithology. 4 credits. study of evolution, systematic, physiology, ecology and behaviour of birds, emphasizing the work on the field. offered by the school of biology systems. cannot be repeated for credit. biol 538: Maternity. 4 credits. study of evolution, systematic, physiology, ecology andof the mammals, underlining the work on the field. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 538 equivalent. BIOL 539: Erpethology. 4 credits. Studioevolution, systematic, physiology, ecology and behavior of amphibians and reptiles, underlining the work on the field. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 543: Tropical ecosystems. 4 credits. The terrestrial, aquatic and marine ecosystems in the tropics, emphasizing plant communities, plant-animal interactions and the role of human beings in the tropics. Notes: Field trip to tropics required as part of the laboratory. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 543. BIOL 550: Ecology and water landscape management. 3 credits. The field and laboratory approach the ecology of fresh water with emphasis on designing studies, sampling methods, laboratory analysis and data, and writing reports. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 550. BIOL 553: Advanced topics in Immunology. 3 credits. Complete study of immunological mechanisms concerning immunological diseases and transplantation. Offered by the School of Biology Systems. It can be repeated within the degree for up to 6 credits. BIOL 556: Advanced topics in Microbial Physiology and Metabolism. 3 credits. Complete study of microorganisms including growth, nutrition, transport, autotrophic and heterotrophic metabolism, regulation and differentiation. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 559: Fungi and Ecosystems. 3 credits. Consider the impact of fungi on ecosystems in terms of effects on biogeochemical cycling, primary and secondary production, and adjusting the community structure and populations of individual species through their activities as symbionts and parasites. Discuss the role of mushrooms in ameliorant pollutants produced by anthropogenic activity. Offered by the School of Biology Systems. Can not be repeated forcredit. BIOL 459. BIOL 560: Infectious diseases of wildlife. 3 credits. During this course, wildlife diseases will be examined with emphasis emphasiscauses and mechanisms, pathobiology, ecology and epidemiology and meaning of the population. We will explore methods of diagnosis, control, prevention and epidemic of investigation as they apply to the management and conservation of wildlife populations. Moreover, diseases that cross the species barriers will be examined. offered by the school of biology systems. cannot be repeated for credit. equivalent to evpp 560. biol 561: comparative animal physiology. 3 credits. Detailed study of selected physiological systems of invertebrates and vertebrates, emphasising current research. offered by the school of biology systems. cannot be repeated for credit. biol 562: personalized medicine. 3 credits. covers the fundamental principles of molecular medicine, including the definition and necessity of individualized diagnostics and therapeutics. students will study the application of proteomics, genomics and bioinformatics as they refer to individualized therapy, and review the main advances in these fields that have relevance to the molecular medicine of the future. offered by the school of biology systems. cannot be repeated for credit. biol 563: virology. 3 credits. fundamental concepts of the nature of viruses, classification of viruses, cultivation and biochemistry. emphasizes bacteriophage and animal viruses. offered by the school of biology systems. cannot be repeated for credit. biol 564: techniques in virology. 2 credits. basic techniques of propagation, isolation and quantification of animal viruses. offered by the school of biology systems. cannot be repeated for credit. biol 566: genomics cancer. 3 credits. review of modern concepts in cancer biology, including human tumor taxonomy, common cancer syndrome and genome instability. Genetic and molecular studies of tumor cell proliferation, migration, invasion and death. offered by the schoolBiology systems. It cannot be repeated for credit. BIOL 568: Advanced topics in Molecular Genetics. 3 credits. Complete study of regulatory mechanisms that control genein viruses, prokaryotes and eukaryotes, emphasizing current research. offered by the school of biology systems. can be repeated within the degree for up to 6 credits. equivalent to biol 668. biol 572: human genetics. 3 credits. heredity of human beings underlines current problems, including genetic control of metabolic diseases, effects of radiation and chemicals in the environment, and direct genetic change. offered by the school of biology systems. cannot be repeated for credit. biol 573: development genetics. 3 credits. Genetic approaches to the problem of Eucharistic development, underlining the current research on the regulation of gene enzymatic systems. offered by the school of biology systems. cannot be repeated for credit. biol 574: population genetics. 3 credits. genetic and dynamic structure of populations, both real and ideal. offered by the school of biology systems. cannot be repeated for credit. biol 575: topics selected in genetics. 1-4 credits. different topics in several years, including molecular, evolutionary, physiological and classical genetics, underlining current problems and research. Notes: can be repeated once with the permission of the department chair. offered by the school of biology systems. can be repeated within the deadline for a maximum of 8 credits. biol 577: biogeochemistry: a global perspective. 3 credits. structure and function of ecosystems, their interactions as components of landscapes and contributions to the global environment. emphasizes the biogeochemical cycles of natural ecosystems, disturbed and managed, and their integration at landscape and global level in relation to current ecological problems such as the transfer of non-point pollutants, atmospheric deposition, stratospheric depletion of ozone and global change. offered by the school of biology systems. cannot be repeated for credit. biol 578:DNA repair and environmental contamination. 3 credits. Overview of the relationship between environmental contamination and genetic damage. Covers Coversof contamination that causes mutations and molecular mechanisms of damage and repair of DNA. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 579: Molecular and conservation genetics. 3 credits. Evolution of genes and gene families at molecular level, including gene duplication and divergence, positive and negative selection, genetic drift and molecular clocks. It also includes selected applications in conservation genetics, such as molecular phylogenetics and population size estimates. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 580: Computer applications for life sciences. 3 credits. Studies on computer use in biological sciences. Combine lessons, supervised exercises on mainframes and microcomputers. Students present seminars on advanced application and full project using computers to meet an important assignment associated with another course or work. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 581: Ecology Estuarina and Coaster. 3 credits. It emphasizes marine biology of the coastal and eastern habitats of the Chesapeake Bay region, and factors that influence the distribution and abundance of organisms. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 581. BIOL 582: Laboratory of External Ecology and Coaster. 1 credit. EVPP 546/BIOL 546 as a laboratory section focusing on the approach and methods of executive research, including analysis and communication of results. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 582 equivalent. BIOL 583: General Biochemistry. 4 credits. Structure and function of protein, carbohydrates and lipids, enzymes and metabolism and its controls. Emphasizes the chemistry of nitrogen compounds. Offered by the SchoolBiology systems. It cannot be repeated for credit. Equivalent to BIOL 483. BIOL 585: Laboratory of eukaryotic cell biology. 1-2 credits. Selected Selectedlaboratory procedures used in the study of eukaryotic cells. Notes: It can be repeated once with the permission of director of the program. Offered by the School of Biology Systems. It cannot be repeated for credit. Equivalent to BIOL 485. BIOL 589: Practical Teaching. 1 credit. Biology teaching experience in laboratory or field under the supervision of faculty member. Notes: Instructor of university assistants. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 607: Foundations of Ecology. 3 credits. Overview of concepts in physiological ecology, population, community and ecosystem. Restricted to graduates with little or no background in ecology. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 607. BIOL 608: Biology topics. 1-4 credits. In-service course to strengthen and update the knowledge of the biology teacher. Topics include organic biology, cellular biology, ecology, microbiology or genetics. Notes: Not available for credit towards MS in biology, or PhD in environmental sciences and public policy. It can be repeated for credit with the permission of the department chair. Offered by the School of Biology Systems. It can be repeated within the degree for up to 12 credits. BIOL 610: Bioremediation: Theory and Applications. 3 credits. Provides the basis for understanding the correct application of bioremedial technologies to the treatment for hazardous waste. Includes data evaluation to determine successful treatment. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 610 equivalent. BIOL 611: Techniques in Environmental Microbiology. 2 credits. Laboratory exercises illustrate techniques to demonstrate microbial degradation, microbial detection, insulation and characteristics assessmentand genetics. Notes: Open first to those enrolled in BIOL 610. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 643: Microbial Ecology. 4 credits. Study ofbetween microorganisms and their natural environment, and the methodology to observe their natural environment and biochemical activities in this environment. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 643. BIOL 648: Population Ecology. 3 credits. Survey on models and ecological theory. Topics include population growth and regulation; competition; predator-prey, grass-plant and parasite-host interactions; mutualism; and metapopulation ecology. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 648. BIOL 649: Management of biological resources. 3 credits. It is based on modern ecological theories and methods for managing biological resources in developing and developing countries. Explore problems in achieving optimum productivity of specific resources and in applying system analysis. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 665: Environmental violence to human health. 3 credits. Sanitary effects of chemical contaminants of air, water and food derived from industrialized society. Includes identification, assessment and risk control. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 666: Concepts of Human Genetics for Health. 3 credits. Principles of genetically determined diseases with emphasis on the clinical aspects of these diseases, genetic counseling and laboratory methods used in human genetics. Students of prolonged studies preparing to enter a medical or dental school are welcome. Notes: Course in cellular or molecular biology. Not available for students who took BIOL 572. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 667: Transduction of signs in cancer. 3 credits. Principles of signal transduction inwith an emphasis on their biological and clinical implications. the course will explore the role of different signalling paths in intracellular inter and intracellular modulationdevelopment of cancer and therapeutic interventions. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 668: Advanced Techniques in Molecular Biology. 4 credits. Experimental studies using current methods for the purification and characterization of biologically important compounds. Provides training for research in molecular biology. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 669: Patogen microbiology. 3 credits. Molecular mechanisms of bacterial pathogenicity and immune response in infectious diseases. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 675: Aerosol Biology. 4 credits. It provides students familiar with the state of art aerosol equipment and techniques used in laboratory-based research regarding biological warfare or threats of terrorism. The emphasis will be placed on procedures, techniques and biosafety equipment used to conduct experiments with infectious organisms in a contained environment. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 678: Cell-based analysis. 2 credits. Concentrate on 1) the foundations of the Eucharistic culture of cells; 2) various cell-based analysis techniques; 3) Functional analysis based on PCR in real time of signaling routes. Students will maintain their cell cultures for the duration of experiments, perform at least one functional test and analyze the resulting data. Students are required to learn the properties and limitations of each cell-based test and should be able to explain their results regardless of the result. Each student will be responsible for presenting a written report that summarizes the design of their experiments and their results. Each report will include the following sections: Introduction, methods, results and discussions, andSpecial problems resolution section. Notes: A $300 lab fee will be charged per student for lab supplies. Offered by the School of Biology Systems. It cannot be repeated for credit. credit.Experimental design and analysis for life sciences. 4 credits. Advanced course in applying probability and statistics to research in life sciences. Examples from environmental, medical, physiological, genetic and chemical biology. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 682: Advanced Eukaryotic Cell Biology. 3 credits. Structure and function of biomembranes, cytoskeleton and transport systems. It also talks about protein traffic, cell cycle and cell adhesion molecules. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 685: Emerging infectious diseases. 3 credits. Students will gain an understanding of the pathogenesis of emerging and/or emerging infectious diseases in terms of immune response and systemic alterations. Factors contributing to the emergence and virulence for each pathogen will be emphasized. Epidemiology, progression of disease, treatment strategies and/or control measures of identified infectious diseases will be discussed. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 689: Interdisciplinary tools in biosciences. 3 credits. Class provides an experiential learning of the basic tools necessary for a career development of scientist. The tools covered in this class allow to conduct research of biosciences, i.e., identify the unsatisfied needs in science, perform research of scientific and patented literature, design experiments, understand and apply the state of art-omic technology, perform statistical analysis of data and mathematical modeling, interpret the study results, recognize and eliminate sources of prejudice, build knowledge from data, and communicate the results of scientific research to peers and audiences. Students will be guided on howemerging trends in science, and will be given the tools to creatively explore these trends, so that their research will be timely and competitive. Offered by System SchoolIt cannot be repeated for credit. BIOL 690: Introduction to graduates in Biology. 1-2 credits. BIOL 691: Current topics in Biology. 1-4 credits. Study of current topics in biology as determined by the instructor. Topics vary and focus on emerging areas of survey in biological sciences. Offered by the School of Biology Systems. It can be repeated within the deadline for a maximum of 8 credits. BIOL 692: Seminar in Biology. 1 credit. BIOL 693: Direct studies in biology. 1-8 credits. Study of subject not otherwise available in the degree program. It can involve any combination of reading tasks, tutorials, conferences, documents, presentations, or laboratory or field study, determined in consultation with the instructor. Notes: It can not be used to meet the explicit graduate prerequisites for graduate work. Offered by the School of Biology Systems. It can be repeated within the degree for up to 8 credits. BIOL 695: Seminar in Molecular Biology, Microbial and Cellular. 1 credit. Review and discussion of recent literature in specialized area. Includes student presentations. Offered by the School of Biology Systems. It can be repeated within the degree for up to 6 credits. BIOL 715: Microbial Physiology. 3 credits. Complete study of the operation of microbial cells, with emphasis on pathogenic agents. Growth of strings, transport, cellular signalling, biofilm training, antibiotic resistance and secondary metabolites. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 718: Techniques in Microbial Pathogenesis. 3 credits. Laboratory-based class where students perform current techniques in microbial pathogenesis. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 720: Microbial Metabolism. 3 credits. Discussion of catabolic routes andof bacterial pathogens and the regulation and integration of these paths. Offered by the School of Biology Systems. It cannot be repeated for credit. BIOL 745: Environmental toxicology. 3Study of nature, distribution and interaction of toxic chemicals released in the environment. Emphasizes the effects on nonhuman biota, the detection and fate of chemicals, and the implications for government regulation. Offered by the School of Biology Systems. It cannot be repeated for credit. EVPP 745. BIOL 793: Research in Biology. 1-3 credits. Library, laboratory or field investigation under the supervision. Offered by the School of Biology Systems. It can be repeated within the degree for up to 3 credits. BIOL 798: Master's Research Project. 1-3 credits. Project of experimental or theoretical research chosen and completed under the guidance of a member of the degree faculty. A comprehensive report is required for the student's advisory committee. Notes: Students taking BIOL 793 cannot receive more than 6 total credits for both BIOL 793 and 798. Offered by the School of Biology Systems. It can be repeated within the degree for up to 6 credits. BIOL 799: Thesis. 1-6 credits. Search for thesis in the direction of supervisor. Notes: Students taking BIOL 793 cannot receive more than 6 total credits for both BIOL 793 and 799. Offered by the School of Biology Systems. It can be repeated within the degree. Bachelor.

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