

APPROVED ELECTIVE COURSES FOR B.A. BIOLOGY MAJORS

BIOLOGY

- BIOL 301/301L **Marine Ecology and Evolution/Lab** (3/1) Pre: BIOL 265/265L, 275/275L and OCN 201. Co-req: 301L. [S]
BIOL 304 **Biotechnology: Science and Ethical Issues** (3) Pre: 171 [F]
BIOL 310 **Environmental Issues** (3) Pre: One of BIOL 101, 123, or GEOG 101. [F even years]
BIOL 331/331L **Biology of Marine Mammals/Lab** (3/2) Pre: BIOL 171/171L, 172/172L and 265/265L [F, S]
BIOL 350 **Sex Differences in the Life Cycle** (3) Pre: one semester of biological science [F, S]
BIOL 363 **Biological Field Studies** (3) Pre: BIOL 171/171L, 172/172L and 265/265L. [SS]
BIOL 390 **Communicating in the Biological Sciences** (3) Pre: ENG 100 or 101, BIOL 171/171L, 172/172L [F]
BIOL 395 **Directed Studies in Biology Teaching** (2) Must be approved in advance by advisor and instructor. [F, S, SS]
BIOL 401 **Molecular Biotechnology** (3) Pre: BIOL 275. [S]
BIOL 403 **Field Problems in Marine Biology** (4) Pre: BIOL 265/L, 275/L, and 301/L and OCN 201. Priority given to marine bio majors [SSII]
BIOL 404 **Advanced Topics in Marine Biology** (3) Pre: BIOL 265/265L, 275/275L, and 301/301L and OCN 201. [S]
BIOL 406/406L **Cellular Biology/Lab** (3/2) Pre: BIOL 275/L; CHEM 273. [S lecture/F lab]
BIOL 407 **Molecular Biology** (3) Pre: BIOL 275/L; CHEM 273. [F]
BIOL 410 **Human Role in Environmental Change** (3) Pre: One of 101, GEOG 101 or 123 and either 310 or GEOG 326 [S odd years]
BIOL 425 **Wildlife and Plant Conservation** (3) Pre: BIOL 171/171L, 172/172L, 265/265L. [S]
BIOL 475 **Bioinformatics: Introduction** (3) Pre: ICS 311 or consent. [S]

BIOCHEMISTRY

- BIOL/MBBE/PEPS 402 **Principles of Biochemistry** (4) Pre: BIOL 275/275L; CHEM 272, 273. [F, S]
BIOC 441 **Basic Biochemistry** (4) Pre: BIOL 275/275L; CHEM 272, 273. [S]

BOTANY

- BOT 311 **Form and Function in Algae & Plants** (3) Pre: BOT 201/201L. [S]
BOT 350 **Resource Management and Conservation in Hawai'i** (3) Pre: college level general biology. [F]
BOT 351/351L **Inside Tropical Ecosystems/Lab** (3/1) Pre: BOT 101 or BIOL 171 and 172. [F]
BOT 410/410L **Plant Anatomy/Lab** (3/1) Pre: BOT 201. Rec: BOT 470. Co-req: 410L. [F]
BOT 430/430L **Mycology/Lab** (2/2) Pre: BOT 201, BIOL 172. [F even years]
BOT 440 **Advanced Ethnobotany** (3) Pre: BOT 105, BIOL 172 [F]
BOT 442 **Medical Ethnobotany** (3) Pre: BOT 105. Rec: CHEM 272 or BIOC 341. [F]
BOT 444 **Ecological Ethnobotany** (3) Pre: BOT 101, 105, 453 or BIOL 101, or consent. [S]
BOT 450 **Natural History of Hawaiian Islands** (3) Pre: one semester of biological sciences at college level. [S]
BOT 453 **Plant Ecology & Environmental Measurements** (4) Pre: one of BOT 101, BIOL 172, or ZOOL 101. [S]
BOT 454 **Vegetation Ecology** (4) Pre: one of BOT 101, 172, or ZOOL 101. Rec: BOT 453 [F]
BOT 456 **Plant-Animal Interactions** (3) Pre: BOT 201/201L or BIOL 265/265L. [F]
BOT 458 **Natural Resources/Ethics** (4) Pre: BOT 201/201L, BIOL 172/L [S]
BOT 461 **Systematics of Vascular Plants** (4) Pre: BOT 101 or college general biology [F]
BOT 462 **Plant Evolution** (3) Pre: BOT 201 or BIOL 172. [F odd years]
BOT 470/470L **Principles of Plant Physiology/Lab** (3/1) Pre: CHEM 152 and BIOL 171. Co-req: 470L. [S]
BOT 480 **Algal Diversity and Evolution** (4) Pre: one of BOT 101, BIOL 172, MICR 351, ZOOL 101. [S]

ICS

- ICS 475 **Bioinformatics** (3) Pre: ICS 311 or consent [F]

MATH

- MATH 304 **Mathematical Modeling I** (4) Pre: MATH 216 or 242 or 252A, or consent. [F]
MATH 305 **Mathematical Modeling II** (4) Pre: MATH 216 or 242 or 252A, or consent. Rec: MATH 304 [S]

MICROBIOLOGY

- MICR 314 **Research Ethics** (1) Pre: BIOL 171/172 [S]
MICR 351/351L **Biology of Microorganisms/Lab** (3/2) Pre: BIOL 171, CHEM 272/L. Rec: BIOL 275/275L. Co-req: 351L. [F, S]
MICR 361 **Introductory Bioinformatics** (4) Pre: BIOL 275/275L
MICR 401/401L **Marine Microbiology/Lab** (3/1) Pre: BIOL 265/L, 275/L, and 301/L, and OCN 201; or MICR 351/351L. Co-req: 401L. [S]
MICR 431/431L **Microbial Physiology/Lab** (3/2) Pre: MICR 351 and BIOC 441. [S]
MICR 461/461L **Immunology/Lab** (3/2) Pre: BIOL 172 or MICR 351. [F]
MICR 463/463L **Microbiology of Pathogens/Lab** (3/2) Pre: MICR 351 and 461/L. Co-req: 463L. [S]
MICR 470 **Microbial Pathogenesis** (3) Pre: MICR 351/L [S]
MICR 475/475L **Bacterial Genetics** (3/2) Pre: MICR 351 or BIOL 275. [F]
MICR 485/485L **Microbes and Their Environment** (3/2) Pre: BIOL 172 and CHEM 272. [F]
MICR 490/490L **Animal Virology/Lab** (3/2) Pre: MICR 351, MICR 461, BIOC 441. Co-req: 490L. [S]

NREM

- NREM 310 **Statistics in Agriculture and Human Resources** (3) [F, S]

OCEANOGRAPHY

- OCN 310/310L: **Global Environmental Change/Lab** (3/2) Pre: one environmentally oriented science course. [F]
OCN 320: **Aquatic Pollution** (3) Pre: OCN 201 or consent.
OCN 331: **Living Resources of the Sea** (3) Pre: OCN 201.
OCN 450: **Aquaculture Production** (3) Pre: BIOL 172

PHYSIOLOGY

- PHYL 301/301L **Human Anatomy and Physiology** (4/1) Pre: CHEM 151/L, and one of 103, BIOL 171, or ZOOL 101. [F]
PHYL 302/302L **Human Anatomy and Physiology** (4/1) Pre: 301/L [S]

ZOOLOGY

ZOOL 306/306L **Ethology** (2/1) Pre: ZOOL 101/101L. [S]

ZOOL 320/320L **Vertebrate Zoology/Lab** (3/2) Pre: BIOL 265. Co-req: 320L [F]

ZOOL 340/340L **Parasitology/Lab** (2/2) Pre: BIOL 275. [S]

ZOOL 410 **Corals and Coral Reefs** (3) Pre: BIOL 265. [S]

ZOOL 416/416L **Histology** (3/2) Pre: BIOL 275. Rec: BIOL 406

ZOOL 420/420L **Developmental Biology/Lab** (3/2) Pre: BIOL 275. Rec: BIOL 406. [F lecture/S lab]

ZOOL 430/430L **Animal Physiology/Lab** (3/2) Pre: BIOL 275. Co-req: 430L. [S]

ZOOL 432 **Comparative Physiology** (3) Pre: BIOL 171, BIOL 172, BIOL 402 (or concurrent) or BIOC 441 (or concurrent). [F even yr.]

ZOOL 439/439L **Animal Ecology/Lab** (3/2) Pre: BIOL 265 and MATH 215. [F]

ZOOL 442 **Introduction to Neuroscience** (3) Pre: BIOL 275/L [F]

ZOOL 450 **Natural History of Hawaiian Islands** (3) Pre: one semester of biological sciences at college level. [S]

ZOOL 460 **Avian Biology** (3) Pre: BIOL 265. [F even years]

ZOOL 465/465L **General Ichthyology/Lab** (3/1) Pre: BIOL 265. Co-req: 465L. [F]

ZOOL 466 **Fisheries Science** (3) Pre: One of 410, 465, 470. [S]

ZOOL 467 **Ecology of Fishes** (3) Pre: BIOL 465. [S]

ZOOL 470/470L **Limnology/Lab** (2/1) Pre: BIOL 172. Co-req: 470L. [S odd yr.]

ZOOL 475/475L **Invertebrate Zoology/Lab** (3/2) Pre: BIOL 172 and CHEM 161. Co-req: 475L. [F]

ZOOL 480 **Animal Evolution** (3) Pre: one of ZOOL 475/L, or ZOOL 320; and BIOL 265. Rec: BIOL 275 and 375. [S]

ZOOL 485 **Biogeography** (3) Pre: BIOL 172. [S even yr.]

NOTE: Other courses not listed may count for electives upon approval of Biology Program (bioadvise@hawaii.edu).

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