

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	高级动物生理学/ADVANCED TOPICS IN ANIMAL PHYSIOLOGY
2.	课程性质 Compulsory/Elective	面向硕士、博士研究生
3.	课程学分/学时 Course Credit/Hours	1 学分, 16 学时
4.	授课语言 Teaching Language	中英文
5.	授课教师 Instructor(s)	侯圣陶
6.	是否面向本科生开放 Open to undergraduates or not	否
7.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 无
8.	教学目标 Course Objectives	<p>《高级动物生理学》是生命科学的核心, 为一门研究动物机体基本生命活动及其规律的学科。通过课程学习, 使学生掌握动物在适应环境变化的过程中所发生的包括行为、各器官系统、细胞及其组成物质分子在内的活动变化与机制的基本规律、基本理论; 了解动物生理的理论在动物医学、动物生产、动物资源保护与利用等实践活动中的作用; 了解动物生理和其它相关学科间的相互关系及该学科发展的前沿热点问题, 为后续课程的学习和今后从事动物生理学及其相关学科的研究、发展打下宽厚的理论基础。</p> <p>This course will examine the physical and chemical principles governing the lives of animals with an emphasis on understanding the physiological problems animals face, how those problems vary in relation to animals' environments, and the processes by which animals solve their problems.</p>
9.	教学方法 Teaching Methods	<p>讲授 10 小时 习题/辅导/讨论/课堂 presentation 6 小时</p>
10.	教学内容 Course Contents	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
	Section 1	<p>动物生理研究内容、方法简介 (1h) Introduction of Animal Physiology (1h)</p> <p>[1] The definition of Animal Physiology</p> <p>[2] How Animal Physiology is Studied?</p> <p>[3] Two central questions Physiology seeks to answer – mechanism and origin (why and how)</p>

	<p>[4] Definition for Evolution, natural selection and adaptation</p> <p>[5] Homeostasis – conformity VS regulation</p> <p>[6] Phenotypic changes of an individual animal vs a population (adaption, genetic drift)</p>
Section 2	<p>血液、血液循环以及心脏节律原理 (2h) Blood, Circulation and Heart Rhythms (2h)</p> <p>[1] Basic Properties of Blood</p> <p>[2] Hematopoiesis</p> <p>[3] Respiratory Pigments structures and properties in oxygen binding</p> <p>[4] Blood coagulation</p> <p>[5] Circulation and heart rhythm generation</p>
Section 3	<p>呼吸与呼吸节律调控原理 (1h) Respiration and rhythm regulation (1h)</p> <p>[1] Fundamental concepts of External Respiration</p> <p>[2] Principles of internal respiration</p> <p>[3] Introduction to breathing by mammals</p>
Section 4	<p>消化、能量代谢以及体温调控原理 (2h) Nutrition, Digestion, Metabolism and Temperature regulation</p> <p>[1] Energy metabolism</p> <p>[2] Thermal regulations</p> <p>[3] Food, energy, and temperature at work</p>
Section 5	<p>肾脏以及尿液浓缩的原理 (1h) Kidney, Urine Excretion (1h)</p> <p>[1] Structure of mammalian kidney</p> <p>[2] Basic Mechanisms of Kidney Function</p> <p>[3] Urine Formation in Mammals</p>
Section 6	<p>神经已经内分泌调控原理 (2h) Nervous System and Neuroendocrinology (2h)</p> <p>[1] Introduction to Endocrine Principles</p> <p>[2] Synthesis, Storage, and Release of Hormones</p> <p>[3] Control of endocrine secretion - the vertebrate pituitary gland</p> <p>[4] The Mammalian Stress Response</p>
Section 7	<p>高等动物生殖与泌乳原理 (1h) Vertebrate Animal Reproduction and Lactation (1h)</p> <p>[1] Mechanisms of mate association</p> <p>[2] Control of the annual cycle of reproduction</p> <p>[3] Mechanism of function of the reproductive cells and organs</p> <p>[4] Coordination of the reproductive organs by neural, endocrine and neuroendocrine mechanisms</p>

11. 课程考核
Course Assessment

出勤 Attendance 20 缺席一次扣 2 分

课堂表现
Class Performance 20

课程项目
Projects

期末考试
Final Exam 60 考察方式（提交命题综述论文）

12. 教材及其它参考资料
Textbook and Supplementary Readings

教材(Teaching material):

《Animal Physiology, 3rd Edition, 2012》

Sinauer by Hill, Wyse, and Anderson

参考书 (Reference book):

1. 《动物生理学（第2版）》 杨秀平，肖向红，主编

网络资源:

1. <http://sites.sinauer.com/animalphys3e/>

2. Quiz Website: <http://sites.sinauer.com/animalphys3e/quiz/>