

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	解剖与生理 Anatomy and Physiology
2.	授课院系 Originating Department	生物医学工程系 Department of Biomedical Engineering
3.	课程编号 Course Code	BMEB216
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业基础课 Major Foundational Courses
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	英文 English
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	姚明曦, 助理教授 Mingxi Yao, Assistant Professor, yaomx@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	

11. 授课方式 Delivery Method	讲授	习题/辅导/讨论	实验/实习	其它(请具体注明)	总学时
	Lectures	Tutorials	Lab/Practical	Other (Please specify)	Total
学时数 Credit Hours	48				48
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无 None				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 None				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 None				

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程的教学目标是：解剖与生理包含传统课程体系中的人体解剖学和人体生理学两门学科的基础内容，主要涉及正常人体形态结构与功能活动机制。本课程主要目标是帮助学生掌握基本生理知识和术语，人体主要器官的大体形态结构和空间位置关系及其功能活动规律，学习细胞，组织，器官，系统，人体等相关知识，为后续智能医学工程课程及项目打下坚实基础。

The main objective of this course is to give the students a fundamental understanding of the human body structures and regular functional activities. This course mainly teaches human anatomy (structure) and physiology (function) from an integrative perspective. This course helps the students to gain the basic knowledge and terminologies of the structure and function of the cells, tissues, organ systems, the human body and their relationships, laying a solid foundation for subsequent courses in Intelligent Medical Engineering and life science.

16. 预达学习成果 Learning Outcomes

通过学习，本课程预达下列学习成果：

1. 掌握人体解剖与生理的有关基本概念以及两者之间的联系。
2. 掌握不同层次结构的功能和调节。
3. 了解不同系统之间的结合和稳态。
4. 学生在理解的基础上能用自己的语言表达解剖生理学基本概念、过程及生理意义，完成课程小组汇报
5. 了解一些重要医疗器械如起搏器，脑电图，ECMO 等工作的生理学基础

After one semester of course study, we plan to achieve the following goal:

1. Master the basic concepts of human anatomy and physiology, and the connections between the anatomy and physiology.
2. Master the structure and function of different levels of organization of the human organism.
3. Understand the integration and homeostasis of human systems.
4. On the basis of understanding, students can use their own language to express the basic concepts, processes, and physiological significance, and complete the course group report.
5. Understand the physiological basis of key biomedical devices such as peacemaker, ECMO etc

17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

Section 1 人体解剖与生理的简介（3 学时）

介绍人体的基本结构、生命活动的基本特征，人体内环境稳态及其调节。

Section 1 An Introduction to Anatomy and Physiology

Introduce the basic structure of the human body, the basic characteristics of life activities, the homeostasis of the human body and its regulation.

Section 2 细胞的结构与功能（3 学时）

介绍细胞的结构和基本功能。

Section 2 Cell Structure and Function

Understand the anatomy at a cell level and basic functions of cells.

Section 3 人体基本组织（3 学时）

介绍上皮组织，结缔组织，肌组织，神经组织。

Section 3 The Tissue Level of Organization

Learn the body organization at a tissue level, including epithelial tissue, connective tissue, muscle tissue, and nerve tissue.

Section 4 运动系统（3 学时）

主要介绍骨和骨连接，骨骼肌。

Section 4 Skeletal and muscular System

Understand bone and joints, skeletal muscle.

Section 5 神经系统及大脑（3 学时）

主要介绍：简介神经的结构及功能以及大脑

Section 5 Nervous System and Brain.

Understand the nervous system, including the generation and propagation of an action potential.

Section 6 感觉器官（3 学时）

详细介绍眼，耳，皮肤。

Section 6 Sense Organs

Understand the sense organs of eye, ear and skin.

Section 7 内分泌系统（3 学时）

主要介绍内分泌系统一般适应症。

Section 7 Endocrine System.

Understand the endocrine and the general adaptation syndrome.

Section 8 血管和循环系统（3 学时）



主要介绍血液，血管及体循环。

Section 8 Blood, Blood Vessels and Circulation.

Learn the major vessels of the systemic circuit.

Section 9 心血管系统（3 学时）

主要介绍心脏的结构及功能。

Section 9 Cardiovascular System.

Understand the anatomy and function of cardiovascular system.

Section 10 淋巴系统和免疫（3 学时）

主要介绍淋巴细胞种类及基础的免疫机制。

Section 10 The Lymphatic System and Immunity

Learn the origin and distribution of lymphocytes, basic concepts of immunity.

Section 11 呼吸系统（3 学时）

主要介绍肺通气和呼吸控制。

Section 11 The Respiratory System

Understand the respirator system, including pulmonary ventilation and the control of respiration.

Section 12 消化系统（3 学时）

主要介绍消化过程中胃活动和体液的调节。

Section 12 The Digestive System

Understand the digestive system, including the regulation of gastric activity and chemical events in digestion.

Section 13 泌尿系统及体液平衡（3 学时）

主要介绍肾脏及泌尿系统的结构及功能以及体液平衡的调控。

Section 13 The Urinary System

Understand the urinary system, kidney function and fluid balance.

Section 14 能量代谢与体温（3 学时）

介绍能量代谢，体温及其调节。

Section 14 Energy Metabolism and Body Temperature

Understand the energy metabolism, body temperature and its regulation.

Section 15 生殖，发育，遗传及老化（3 学时）

主要介绍人体升值发育过程中的。

Section 15 Reproduction, development, heredity and aging

Learn the regulation of male reproduction and regulation of female reproduction.

期末汇报（3 学时）

学生在课堂上对各系统的调节机制进行讨论。

Final presentation

According to the group project in this semester, students discuss the organization and regulation of various systems in the human organism, and how they function together.

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

Textbook

Principles of Anatomy and Physiology, by Gerard J. Tortora, and Bryan Derrickson, John Wiley & Sons, Inc. 2017.

Supplementary Readings

Vander's Human Physiology, the mechanisms of body function. By Eric P. Widmaier, Hershel Raff and Kevin T. Strang

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects		30		以小组汇报的形式完成课程项目，目的培养学生小组合作能力； Finish a team project via presentation and help students to learn about teamwork.
平时作业 Assignments		20		通过布置作业，让学生复习和使用课堂学习的内容以及学习收获； Students learn to apply the theory and algorithms in the homework, to summarize what they learned in the class.
期中考试 Mid-Term Test				
期末考试 Final Exam		50		通过期末考试的形式，考察学生对课程知识理解程度； Help students to summarize and digest what they learning during the course in the final exam.
期末报告 Final Presentation				
其它（可根据需要 改写以上评估方式） Others (The above may be modified as necessary)				



20. 记分方式 **GRADING SYSTEM**

- A. 十三级等级制 **Letter Grading**
 B. 二级记分制（通过/不通过） **Pass/Fail Grading**

课程审批 **REVIEW AND APPROVAL**

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

生物医学工程系教学委员会

